

09/939225

***** Welcome to STN International *****

NEWS 1 Web Page URLs for STN Seminar Schedule - N. America
 NEWS 2 Apr 08 "Ask CAS" for self-help around the clock
 NEWS 3 Apr 09 BEILSTEIN: Reload and Implementation of a New Subject Area
 NEWS 4 Apr 09 ZDB will be removed from STN
 NEWS 5 Apr 19 US Patent Applications available in IFICDB, IFIPAT, and IFIUDB
 NEWS 6 Apr 22 Records from IP.com available in CAPLUS, HCAPLUS, and ZCAPLUS
 NEWS 7 Apr 22 BIOSIS Gene Names now available in TOXCENTER
 NEWS 8 Apr 22 Federal Research in Progress (FEDRIP) now available
 NEWS 9 Jun 03 New e-mail delivery for search results now available
 NEWS 10 Jun 10 MEDLINE Reload
 NEWS 11 Jun 10 PCTFULL has been reloaded
 NEWS 12 Jul 02 FOREGE no longer contains STANDARDS file segment
 NEWS 13 Jul 22 USAN to be reloaded July 28, 2002;
 saved answer sets no longer valid
 NEWS 14 Jul 29 Enhanced polymer searching in REGISTRY
 NEWS 15 Jul 30 NETFIRST to be removed from STN
 NEWS 16 Aug 08 CANCERLIT reload
 NEWS 17 Aug 08 PHARMAMarketLetter(PHARMAML) - new on STN
 NEWS 18 Aug 08 NTIS has been reloaded and enhanced
 NEWS 19 Aug 19 Aquatic Toxicity Information Retrieval (AQUIRE)
 now available on STN
 NEWS 20 Aug 19 IFIPAT, IFICDB, and IFIUDB have been reloaded
 NEWS 21 Aug 19 The MEDLINE file segment of TOXCENTER has been reloaded
 NEWS 22 Aug 26 Sequence searching in REGISTRY enhanced
 NEWS 23 Sep 03 JAPIO has been reloaded and enhanced
 NEWS 24 Sep 16 Experimental properties added to the REGISTRY file
 NEWS 25 Sep 16 Indexing added to some pre-1967 records in CA/CAPLUS
 NEWS 26 Sep 16 CA Section Thesaurus available in CAPLUS and CA
 NEWS 27 Oct 01 CASREACT Enriched with Reactions from 1907 to 1985
 NEWS 28 Oct 21 EVENTLINE has been reloaded
 NEWS 29 Oct 24 BEILSTEIN adds new search fields
 NEWS 30 Oct 24 Nutraceuticals International (NUTRACEUT) now available on STN
 NEWS 31 Oct 25 MEDLINE SDI run of October 8, 2002
 NEWS 32 Nov 18 DKILIT has been renamed APOLLIT
 NEWS 33 Nov 25 More calculated properties added to REGISTRY

 NEWS EXPRESS October 14 CURRENT WINDOWS VERSION IS V6.01,
 CURRENT MACINTOSH VERSION IS V6.0a(ENG) AND V6.0Ja(JP),
 AND CURRENT DISCOVER FILE IS DATED 01 OCTOBER 2002
 NEWS HOURS STN Operating Hours Plus Help Desk Availability
 NEWS INTER General Internet Information
 NEWS LOGIN Welcome Banner and News Items
 NEWS PHONE Direct Dial and Telecommunication Network Access to STN
 NEWS WWW CAS World Wide Web Site (general information)

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***** STN Columbus *****

FILE 'HOME' ENTERED AT 17:37:08 ON 01 DEC 2002

=> file caplus		
COST IN U.S. DOLLARS	SINCE FILE	TOTAL
	ENTRY	SESSION
FULL ESTIMATED COST	0.21	0.21

FILE 'CAPLUS' ENTERED AT 17:37:39 ON 01 DEC 2002
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FILE COVERS 1907 - 1 Dec 2002 VOL 137 ISS 23
 FILE LAST UPDATED: 29 Nov 2002 (20021129/ED)

This file contains CAS Registry Numbers for easy and accurate substance identification.

CAS roles have been modified effective December 16, 2001. Please check your SDI profiles to see if they need to be revised. For information on CAS roles, enter HELP ROLES at an arrow prompt or use the CAS Roles thesaurus (/RL field) in this file.

```
=> s fatty acid
      309984 FATTY
          13 FATTIES
      309987 FATTY
          (FATTY OR FATTIES)
      3489628 ACID
      1337893 ACIDS
      3953780 ACID
          (ACID OR ACIDS)
L1      273225 FATTY ACID
          (FATTY(W)ACID)
```

```
=> fat or oil
FAT IS NOT A RECOGNIZED COMMAND
The previous command name entered was not recognized by the system.
For a list of commands available to you in the current file, enter
"HELP COMMANDS" at an arrow prompt (=>).
```

```
=> s fat or oil
      152363 FAT
      83943 FATS
      193076 FAT
          (FAT OR FATS)
      638125 OIL
      276291 OILS
```

```

716050 OIL
(OIL OR OILS)
L2      837432 FAT OR OIL

=> 1 and 2
1 IS NOT A RECOGNIZED COMMAND
The previous command name entered was not recognized by the system.
For a list of commands available to you in the current file, enter
"HELP COMMANDS" at an arrow prompt (=>).

=> s 1 and 2
7358197 1
7534268 2
L3      4639081 1 AND 2

=> del l3 y

=> s l1 and l2
L3      92558 L1 AND L2

=> s l3 and (fuel oe coal)
283034 FUEL
134381 FUELS
328783 FUEL
(FUEL OR FUELS)
18691 OE
1418 OES
20099 OE
(OE OR OES)
196235 COAL
34046 COALS
199574 COAL
(COAL OR COALS)
0 FUEL OE COAL
(FUEL(W)OE(W)COAL)
L4      0 L3 AND (FUEL OE COAL)

=> s l3 and (fuel or coal)
283034 FUEL
134381 FUELS
328783 FUEL
(FUEL OR FUELS)
196235 COAL
34046 COALS
199574 COAL
(COAL OR COALS)
L5      2364 L3 AND (FUEL OR COAL)

=> s l5 and (burn? or ignit? or energy)
148095 BURN?
60602 IGNIT?
1587150 ENERGY
286579 ENERGIES
1684689 ENERGY
(ENERGY OR ENERGIES)
L6      342 L5 AND (BURN? OR IGNIT? OR ENERGY)

=> s l6 and emission
394304 EMISSION
70881 EMISSIONS
427663 EMISSION
(EMISSION OR EMISSIONS)

```

L7 56 L6 AND EMISSION

=> d 17 1-56 all

L7 ANSWER 1 OF 56 CAPLUS COPYRIGHT 2002 ACS

Full Text

AN 2002:810252 CAPLUS

DN 137:341362

TI Purification of regenerative **fuel** exhaust gases from diesel motors with oxy- and SCR catalysts

AU Lachenmaier-Kolch, Jurgen

CS Gunzburg, Germany

SO Fortschritt-Berichte VDI, Reihe 15: Umwelttechnik (2002), 241, i-ix,1-111
CODEN: FRUMFB; ISSN: 0178-9589

PB VDI Verlag GmbH

DT Journal

LA German

CC 59-3 (Air Pollution and Industrial Hygiene)

Section cross-reference(s): 52, 67

AB The chair **Energy** and Environmental Technologies of the Food Industry operates a small co-generation plant with the ability of analyzing the std. **emission** components. Results of an investigation on 3 different **fuels** (diesel **fuel**, food recycling oil Me ester (AME) and rapeseed oil) with oxidn.- and SCR-catalysts will be presented. Also a high temp. reactor was designed and instrumented for analyzing SCR-catalysts with a chem.-ionization-mass-spectrometer. The aim is an optimization of oxidn.- and SCR-catalysts for best NOx-redn. rates addnl. with the possibility of using renewable **fuels**. The optimal conversion rate for NOx with the SCR-catalyst is a temp. range 200-350°. The best Alpha-value is 90-110%. The CO-, HC- and particle **emissions** of rapeseed oil and AME is lower then the **emissions** of diesel **fuel**. The **emissions** of NOx for rapeseed oil rise up to 20% in comparison to diesel **fuel**. The redn. rate of the **emissions** of NOx rise (with the help of urea injection) up to 54, 61, and 67% for rapeseed oil, AME, and diesel **fuel**, resp. The CO-**emissions** are reduced to 89% with the use of the oxidn. catalysts, with urea injection 1-3% more redn. The HC-**emissions** are reduced to 43% with the use of the oxidn. catalysts, with the injection of urea 1-8% more redn. Ammonia is detected after urea injection up to 7 mg/m3 for all **fuels**. N2O **emissions** are detected after the injection of urea. The use of diesel **fuel** causes the doubled value of particle **emissions** in comparison to the renewable **fuels**.

ST regenerative diesel **fuel** exhaust treatment catalyticIT Diesel **fuel** substitutes(biodiesel; **emission** redn. of regenerative **fuel**

powered co-generation plants with oxy- and SCR catalysts)

IT Air pollution

(control; **emission** redn. of regenerative **fuel**

powered co-generation plants with oxy- and SCR catalysts)

IT Exhaust gases (engine)

(diesel; **emission** redn. of regenerative **fuel**

powered co-generation plants with oxy- and SCR catalysts)

IT Diesel **fuel**

Exhaust gas catalytic converters

Exhaust gases (engine)

Exhaust particles (engine)

(**emission** redn. of regenerative **fuel** powered

co-generation plants with oxy- and SCR catalysts)

IT Hydrocarbons, processes

RL: REM (Removal or disposal); PROC (Process)

(**emission** redn. of regenerative **fuel** powered

co-generation plants with oxy- and SCR catalysts)

IT **Fats** and Glyceridic oils, uses

- RL: TEM (Technical or engineered material use); USES (Uses)
(**emission** redn. of regenerative **fuel** powered
co-generation plants with oxy- and SCR catalysts)
- IT **Fatty acids**, uses
RL: TEM (Technical or engineered material use); USES (Uses)
(**emission** redn. of regenerative **fuel** powered
co-generation plants with oxy- and SCR catalysts)
- IT **Rape oil**
RL: TEM (Technical or engineered material use); USES (Uses)
(**emission** redn. of regenerative **fuel** powered
co-generation plants with oxy- and SCR catalysts)
- IT 630-08-0, Carbon monoxide, processes 7664-41-7, Ammonia, processes
10102-44-0, Nitrogen oxide (NO2), processes 11104-93-1, Nitrogen oxide,
processes
RL: REM (Removal or disposal); PROC (Process)
(**emission** redn. of regenerative **fuel** powered
co-generation plants with oxy- and SCR catalysts)
- RE.CNT 88 THERE ARE 88 CITED REFERENCES AVAILABLE FOR THIS RECORD
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L7 ANSWER 2 OF 56 CAPLUS COPYRIGHT 2002 ACS

Full Text

AN 2002:754505 CAPLUS

DN 137:281625

TI Plant extracts-jojoba oil-based additives for liquid fuels for reduced pollutant emissions

IN Jordan, Frederick L.

PA Oryxe Energy International, Inc., USA

SO PCT Int. Appl., 173 pp.

CODEN: PIXXD2

DT Patent

LA English

IC ICM C10L010-02

CC 51-7 (Fossil Fuels, Derivatives, and Related Products)

FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
	-----	---	----	-----	----
PI	WO 2002077131	A2	20021003	WO 2002-US6137	20020226
	W:				
	AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, BZ, CA, CH, CN,				
	CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, EG, ES, FI,				
	FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP,				
	KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX,				
	MZ, NO, NZ, OM, PH, PL, PT, RO, RU, SD, SE, SG, SI, SK, SL,				
	TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VN, YU, ZA, ZM, ZW, AM,				
	AZ, BY, KG, KZ				
	RW: GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZM, ZW, AT, BE, CH,				

CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE, TR,
 BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG

PRAI US 2001-278011P P 20010322

- AB A **fuel** additive suitable for any liq. **fuel**, **coal**, or other hydrocarbon **fuel** consists of an antioxidant (preferably β -carotene), a thermal stabilizer (preferably jojoba oil or a C20-22-monounsaturated **fatty acid ester**), and a plant oil ext. other than alfalfa oil (preferably vetch ext., barley ext., and an ext. from a plant of the Leguminosae family). In addn., the **fuel** additive can contain an oxygenate, esp. chosen from methanol, ethanol, Me tert-Bu ether, Et tert-Bu ether, and tert-amyl Me ether. Addnl. additives that may be present include octane improvers, cetane improvers, detergents, demulsifiers, corrosion inhibitors, metal deactivators, **ignition** accelerators, dispersants, antiknock additives, antioxidants, demulsifiers, etc. The additives can reduce **emissions** and can improve **fuel** economy and engine cleanliness.
- ST **fuel** additive plant ext jojoba oil beta carotene; gasoline diesel **fuel** additive plant ext; **coal fuel oil** additive plant ext; Leguminosae barley vetch ext liq **fuel** additive
- IT **Fatty acids**, uses
 RL: MOA (Modifier or additive use); USES (Uses)
 (C20-22-monounsaturated, esters, thermal stabilizers; plant exts.-jojoba oil-based additives for liq. **fuels** for reduced pollutant **emissions**)
- IT Jet aircraft **fuel**
 (additives; plant exts.-jojoba oil-based additives for liq. **fuels** for reduced pollutant **emissions**)
- IT **Coal**, miscellaneous
 RL: MSC (Miscellaneous)
 (combustion additives for; plant exts.-jojoba oil-based additives for liq. **fuels** for reduced pollutant **emissions**)
- IT Barley
 Embryophyta
 Fabaceae
 Vicia
 (exts.; plant exts.-jojoba oil-based additives for liq. **fuels** for reduced pollutant **emissions**)
- IT Chlorophylls, uses
 RL: MOA (Modifier or additive use); USES (Uses)
 (exts.; plant exts.-jojoba oil-based additives for liq. **fuels** for reduced pollutant **emissions**)
- IT Lubricating oil additives
 (for two-cycle engines; plant exts.-jojoba oil-based additives for liq. **fuels** for reduced pollutant **emissions**)
- IT **Fuels**
 (liq., additives; plant exts.-jojoba oil-based additives for liq. **fuels** for reduced pollutant **emissions**)
- IT Antioxidants
 Diesel **fuel** additives
Fuel oil additives
 Gasoline additives
 Heat stabilizers
 (plant exts.-jojoba oil-based additives for liq. **fuels** for reduced pollutant **emissions**)
- IT Jojoba oil
 RL: MOA (Modifier or additive use); USES (Uses)
 (thermal stabilizers; plant exts.-jojoba oil-based additives for liq. **fuels** for reduced pollutant **emissions**)
- IT 7235-40-7, β -Carotene
 RL: MOA (Modifier or additive use); USES (Uses)

- (antioxidants; plant exts.-jojoba oil-based additives for liq. **fuels** for reduced pollutant **emissions**)
- IT 64-17-5, Ethanol, uses 108-88-3, Toluene, uses 637-92-3 994-05-8, tert-Amyl methyl ether 1634-04-4, Methyl tert-butyl ether
 RL: MOA (Modifier or additive use); USES (Uses)
 (diluent; plant exts.-jojoba oil-based additives for liq. **fuels** for reduced pollutant **emissions**)
- IT 479-61-8
 RL: MOA (Modifier or additive use); USES (Uses)
 (exts.; plant exts.-jojoba oil-based additives for liq. **fuels** for reduced pollutant **emissions**)
- IT 67-56-1, Methanol, uses
 RL: MOA (Modifier or additive use); USES (Uses)
 (plant exts.-jojoba oil-based additives for liq. **fuels** for reduced pollutant **emissions**)

L7 ANSWER 3 OF 56 CAPLUS COPYRIGHT 2002 ACS

Full Text

- AN 2002:669053 CAPLUS
 DN 137:203825
 TI Biodiesel - a growing **fuel** and its marketability
 AU Fischer, Jurgen
 CS Oelmuehle Leer Connemann GmbH, Leer, Germany
 SO Mineraloeltechnik (2002), 47(5), 1-19
 CODEN: MTCKAZ; ISSN: 0341-1893
 PB Beratungsgesellschaft fuer Mineraloel-Anwendungstechnik
 DT Journal; General Review
 LA German
 CC 52-0 (Electrochemical, Radiational, and Thermal Energy Technology)
 Section cross-reference(s): 51
- AB A review. According to our today's knowledge liq. **energy** sources are the best way to assure mobility. Petroleum products like gasoline, diesel **fuel** and kerosene keep us travelling long distances and make it possible to deliver goods to every place in the world. But restricted crude **oil** resources and environmental problems like the global warming effect are suitable arguments to look for alternative **energy** sources. The most important renewable **energy** sources for transportation purposes are liq. **fuels** based on plant oils. Pure plant oils are hardly suitable to be used in modern Diesel engines. By using a simple chem. process, the transesterification, **fatty acid** Me esters can be produced which have phys. properties similar to Diesel **fuel** and are commonly known as Biodiesel. Besides the CO₂ balance which is significantly better than from Diesel, Biodiesel shows some more advantages. Low soot contents, reduced hydrocarbon **emissions** along with low cancerogenic potential are characteristic for **emissions** from Biodiesel. Low toxicity and biodegradability are the most effective characteristics which gives Biodiesel the potential as an alternative **fuel** for regions sensitive to ecol. risks. The advantages of Biodiesel could even be better by using an optimized engine, esp. designed for this **fuel**. In particular the structure of particles emitted by Biodiesel driven engines shows a way to achieve extremely low **emission** limits without using expensive exhaust treatment systems. Based on electronic control devices modern **fuel** injection systems like Common-Rail-Injection and Pump-Injector-Units offer a variety of possibilities. Const. and high level quality are basic requirements for **fuels** suitable for cars. Concerning Biodiesel there are existing a no. of national stds. all over Europe including a European draft std. These stds. have been developed in cooperation with the car manufacturers. Approvals and warranties by the car manufacturers are based on these stds. Increasing prodn. capacities, a reliable and sufficient supply of raw materials as well as the most recent market conditions for Biodiesel caused a rapid sales increase over the last months. Supported by enhanced prodn. figures, including new facilities

- planned and imported quantities the demand for Biodiesel in Germany in 2001 is expected to be around 600.000 tons.
- ST review biodiesel diesel **fuel** substitute
- IT Diesel **fuel** substitutes
(biodiesel; growing **fuel** and its marketability)
- L7 ANSWER 4 OF 56 CAPLUS COPYRIGHT 2002 ACS
- Full Text
- AN 2001:921628 CAPLUS
- DN 136:234304
- TI Biofuels derived from vegetable **oils** and **fats**
- AU Knothe, Gerhard; Dunn, Robert O.
- CS Agricultural Research Service, National Center for Agricultural Utilization Research, US Department of Agriculture, Peoria, IL, 61604, USA
- SO Oleochemical Manufacture and Applications (2001), 106-163. Editor(s): Gunstone, Frank D.; Hamilton, Richard J. Publisher: Sheffield Academic Press, Sheffield, UK.
CODEN: 69CCQZ
- DT Conference; General Review
- LA English
- CC 51-0 (Fossil Fuels, Derivatives, and Related Products)
Section cross-reference(s): 45, 52
- AB A review on the use of vegetable **oil**-based diesel **fuels**, particularly in the form of esters (biodiesel). Topics discussed include sources and prodn. of such **fuels**, general comparison of **fuels** from vegetable **oils** and animal **fats**, process economics, regulatory issues, history and development, combustion of and **emissions** from biodiesel **fuels**, properties of biodiesel (e.g., low-temp. properties and storage stability), blending with conventional diesel **fuels**, transesterification, use of waste vegetable **oils**, pyrolyzed vegetable **oils**, use of microemulsions, and outlook for biodiesel **fuels**. Although vegetable **oil**-based **fuels** cannot replace all petroleum-based diesel **fuels**, they play an important role among the alternative **fuels** and contribute to the goal of **energy** independence and security.
- ST review diesel **fuel** vegetable **oil** biodiesel; transesterification vegetable **oil** biodiesel review
- IT **Fatty acids**, preparation
RL: IMF (Industrial manufacture); PRP (Properties); PREP (Preparation)
(Et esters, biodiesel; biodiesel **fuels** derived from vegetable **oils** and **fats**)
- IT **Fatty acids**, preparation
RL: IMF (Industrial manufacture); PRP (Properties); PREP (Preparation)
(Me esters, biodiesel; biodiesel **fuels** derived from vegetable **oils** and **fats**)
- IT Transesterification
(biodiesel **fuels** derived from vegetable **oils** and **fats**)
- IT Glycerides, reactions
RL: CPS (Chemical process); PEP (Physical, engineering or chemical process); RCT (Reactant); PROC (Process); RACT (Reactant or reagent)
(biodiesel **fuels** derived from vegetable **oils** and **fats**)
- IT Diesel **fuel** substitutes
(biodiesel; biodiesel **fuels** derived from vegetable **oils** and **fats**)
- IT Diesel **fuel** additives
(cetane improvers, for biodiesel; biodiesel **fuels** derived from vegetable **oils** and **fats**)
- IT Combustion
(of biodiesel **fuels**; biodiesel **fuels** derived from vegetable **oils** and **fats**)
- IT Thermal decomposition

(of glycerides; biodiesel fuels derived from vegetable oils and fats)

IT **Fats and Glyceridic oils, processes**

RL: CPS (Chemical process); PEP (Physical, engineering or chemical process); PROC (Process)

(vegetable, waste, glyceride source; biodiesel fuels derived from vegetable oils and fats)

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L7 ANSWER 5 OF 56 CAPLUS COPYRIGHT 2002 ACS

Full Text

AN 2001:816820 CAPLUS
 DN 135:346706
 TI Liquefied gas **fuel** for compression **ignition** engines
 IN Tamura, Masamitsu; Goto, Shinichi; Sugiyama, Kouseki; Kajiwara, Masataka;
 Sagara, Makoto
 PA Iwatani International Corporation, Japan
 SO PCT Int. Appl., 29 pp.
 CODEN: PIXXD2
 DT Patent
 LA English
 IC ICM C10L
 CC 51-7 (Fossil Fuels, Derivatives, and Related Products)
 FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	WO 2001083646	A2	20011108	WO 2001-JP3719	20010427
	W: AE, AU, CA, CN, CZ, ID, IN, KR, MX, PL, SG, US, VN				
	RW: BE, DE, ES, FR, GB, IT, NL, SE				
	JP 2001342474	A2	20011214	JP 2000-161506	20000531
	JP 2002012879	A2	20020115	JP 2000-369658	20001205
	JP 2002173691	A2	20020621	JP 2000-369661	20001205
	AU 2001052646	A5	20011112	AU 2001-52646	20010427
PRAI	JP 2000-128839	A	20000428		
	JP 2000-161506	A	20000531		
	JP 2000-369658	A	20001205		
	JP 2000-369661	A	20001205		
	WO 2001-JP3719	W	20010427		
AB	Disclosed is a liquefied gas fuel , which can reduce emissions of air pollutants, such as black smoke, particulate matter, NOx and SOx in an exhaust gas of a compression ignition engine. The liquefied gas fuel comprises liquefied petroleum gas added with a radical generating agent, a lubricity improving agent and liq. hydrocarbon, or di-Me ether added with the lubricity improving agent.				
ST	LPG lubricant peroxide additive				
IT	Alkanes, uses				
	RL: MOA (Modifier or additive use); USES (Uses) (C8-14, esters; liquefied gas fuel for compression ignition engines)				
IT	Alcohols, uses				
	Fatty acids, uses				
	RL: MOA (Modifier or additive use); USES (Uses) (C8-14; liquefied gas fuel for compression ignition engines)				
IT	Petroleum products				
	RL: PEP (Physical, engineering or chemical process); PROC (Process) (gases, liquefied; liquefied gas fuel for compression ignition engines)				
IT	Petroleum, processes				
	RL: PEP (Physical, engineering or chemical process); PROC (Process) (heavy; liquefied gas fuel for compression ignition engines)				
IT	Lubricants				
	Soot (liquefied gas fuel for compression ignition engines)				
IT	Nitrates, uses				
	RL: CAT (Catalyst use); USES (Uses) (liquefied gas fuel for compression ignition engines)				
IT	Azo compounds				
	RL: MOA (Modifier or additive use); USES (Uses) (liquefied gas fuel for compression ignition engines)				

- engines)
- IT Naphtha
RL: MOA (Modifier or additive use); USES (Uses)
(liquefied gas **fuel** for compression **ignition** engines)
- IT Nitrites
RL: MOA (Modifier or additive use); USES (Uses)
(liquefied gas **fuel** for compression **ignition** engines)
- IT Paraffin oils
RL: MOA (Modifier or additive use); USES (Uses)
(liquefied gas **fuel** for compression **ignition** engines)
- IT Peroxides, uses
RL: MOA (Modifier or additive use); USES (Uses)
(liquefied gas **fuel** for compression **ignition** engines)
- IT Kerosene
RL: PEP (Physical, engineering or chemical process); PROC (Process)
(liquefied gas **fuel** for compression **ignition** engines)
- IT Petroleum products
(oils; liquefied gas **fuel** for compression **ignition** engines)
- IT 110-05-4, Di-tert-butyl peroxide
RL: MOA (Modifier or additive use); USES (Uses)
(liquefied gas **fuel** for compression **ignition** engines)
- IT 74-98-6, Propane, processes 106-97-8, Butane, processes
RL: PEP (Physical, engineering or chemical process); PROC (Process)
(liquefied gas **fuel** for compression **ignition** engines)
- IT 11104-93-1, Nitrogen oxide, processes 12624-32-7, Sulfur oxide
RL: REM (Removal or disposal); PROC (Process)
(liquefied gas **fuel** for compression **ignition** engines)

L7 ANSWER 6 OF 56 CAPLUS COPYRIGHT 2002 ACS

Full Text

AN 2001:765380 CAPLUS

DN 136:122538

TI **Emission** reduction of regenerative **fuel** powered co-generation plants with SCR- and oxidation-catalysts

AU Lachenmaier, J.; Dobiasch, A.; Meyer-Pittroff, R.

CS Lebensmittelindustrie, Technische Universitat Munchen, Freising, D-85350, Germany

SO Topics in Catalysis (2001), 16/17(1-4), 437-442

CODEN: TOCAFI; ISSN: 1022-5528

PB Kluwer Academic/Plenum Publishers

DT Journal

LA English

CC 59-3 (Air Pollution and Industrial Hygiene)

Section cross-reference(s): 67

AB Since the beginning of combustion engine development in this recent century various different **fuels** have been successfully tested. Diesel engines have been adapted to **fuels** made from mineral **oils** because of the rising importance and the cheapness in comparison to other **fuels**. On the other hand, it is possible to **burn** regenerative **fuels** in engines and achieve some significant advantages in comparison to fossil diesel **fuel**. This is, for example, a closed carbon dioxide (CO₂) cycle which causes no green house effect. It is possible to ext. **oil** from various seeds like rapeseed. It is also possible to **burn** used **oil**

from the food processing industry or waste grease and oil from food recycling companies. The great advantages: (1) food recycling oils can produce **energy** instead of use as animal food, and (2) as nobody knows exactly the consistency of the collected oils, poisonous pollution is possible. These regenerative **fuels** can be **burned** without any further processing in special adapted diesel engines, for example an Elsbett engine, or in precombustion engines with large swept vols. Most researchers focused on operating diesel engines with regenerative **fuels** and reducing the **emissions** caring only about regulated exhaust components. In comparison to these studies it is necessary to learn more about the **emissions** beyond the exhaust regulations. Addnl. **emission** redn. is possible by using an SCR-catalyst (selective catalytic redn.) to reduce the NO₂ combined with an oxidn.-catalyst which reduces any kind of oxidizable **emissions**. The TU Munchen, Lehrstuhl fur Energie- und Umwelttechnik der Lebensmittelindustrie, operates a small co-generation plant with the ability of analyzing the std. **emission** components (CO, NO₂, HC, particles, CO₂, O₂) and unregulated components (SO₂, NH₃, polycyclic arom. hydrocarbons (PAH), aldehyde, ketone). The **emissions** show some significant differences in comparison to fossil diesel **fuel** which is caused by the diversity of each **fuel**. Results of an investigation on four different **fuels** (wastefat Me ester (WME), rapeseed Me ester (RME), rapeseed oil and diesel **fuel**) **burned** in a small co-generation plant with a SCR- and oxidn.-catalyst will be presented. A comparison to the **emissions** before and after the catalysts will be shown addnl. to the results of the different redn. potential of diesel **fuel**, Me ester or untreated oils. The combination of regenerative **fuel** and catalyst shows good potential for reducing the **emissions**. Furthermore the use of regenerative **fuels** is a sustainable prodn. of **energy** with an overall efficiency of almost 90%. Regenerative **fuels** based on vegetable oils and waste fat are a valuable form of **energy** and have some significant advantages in comparison to diesel **fuel**, like an almost closed carbon dioxide cycle, rapid biol. decompn. and lower CO, HC and particle **emissions**. Regenerative **fuels** should also meet min. stds. discussed in the paper to avoid the risk of engine damage and to reduce **emissions**.

- ST regenerative **fuel** combustion exhaust treatment
- IT **Fats** and Glyceridic oils, uses
 - RL: TEM (Technical or engineered material use); USES (Uses)
 - (Me esters; **emission** redn. of regenerative **fuel**
 - powered co-generation plants with SCR- and oxidn.-catalysts)
- IT Diesel **fuel** substitutes
 - (biodiesel; **emission** redn. of regenerative **fuel**
 - powered co-generation plants with SCR- and oxidn.-catalysts)
- IT Diesel **fuel**
 - Exhaust gases (engine)
 - (**emission** redn. of regenerative **fuel** powered
 - co-generation plants with SCR- and oxidn.-catalysts)
- IT Hydrocarbons, processes
 - RL: REM (Removal or disposal); PROC (Process)
 - (**emission** redn. of regenerative **fuel** powered
 - co-generation plants with SCR- and oxidn.-catalysts)
- IT Rape oil
 - RL: TEM (Technical or engineered material use); USES (Uses)
 - (**emission** redn. of regenerative **fuel** powered
 - co-generation plants with SCR- and oxidn.-catalysts)
- IT **Fatty acids**, uses
 - RL: TEM (Technical or engineered material use); USES (Uses)
 - (rape-oil, esters; **emission** redn. of regenerative
 - fuel** powered co-generation plants with SCR- and
 - oxidn.-catalysts)
- IT 630-08-0, Carbon monoxide, processes 10024-97-2, Nitrous oxide,
 - processes 10102-44-0, Nitrogen dioxide, processes 11104-93-1, Nitrogen

oxide, processes

RL: REM (Removal or disposal); PROC (Process)

(**emission** redn. of regenerative **fuel** powered

co-generation plants with SCR- and oxidn.-catalysts)

RE.CNT 12 THERE ARE 12 CITED REFERENCES AVAILABLE FOR THIS RECORD

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L7 ANSWER 7 OF 56 CAPLUS COPYRIGHT 2002 ACS

Full Text

AN 2001:466265 CAPLUS

DN 135:213297

TI Wear assessment in a biodiesel fuelled compression **ignition** engine

AU Agarwal, Avinash Kumar; Bijwe, Jayashree; Das, L. M.

CS Engine Research Center, University of Wisconsin, Madison, WI, 53706, USA

SO ICE (American Society of Mechanical Engineers) (2001), 36-3 (Engine Systems: Lubrication, Wear, Components, System Dynamics, and Design), 29-37

CODEN: ICEIEG; ISSN: 1066-5048

PB American Society of Mechanical Engineers

DT Journal

LA English

CC 52-1 (Electrochemical, Radiational, and Thermal Energy Technology)

Section cross-reference(s): 51

AB Biodiesel is prepd. using linseed **oil** and methanol by the process of transesterification. Use of linseed **oil** Me ester (LOME) in compression **ignition** engine was found to develop a highly compatible engine-**fuel** system with low **emission** characteristics. Two similar engines were operated using optimum biodiesel blend and mineral diesel **oil** resp. These were subjected to long-term endurance tests. Lubricating **oil** samples drawn from both engines after a fixed interval were subjected to elemental anal. Quantification of various metal debris concns. was done by at. absorption spectroscopy (AAS). Wear metals were found to be about 30% lower for biodiesel-operated engine system. Lubricating **oil** samples were also subjected to ferrog. indicating lower wear debris concns. for biodiesel-operated engine. The addnl. lubricating property of LOME present in the **fuel** resulted in lower wear and improved life of moving components in biodiesel-fuelled engine. However, this needed exptl. verification and quantification. A series of expts. were thus conducted to compare the lubricity of various concns. of LOME in biodiesel blends. Long duration tests were conducted using reciprocating motion in SRV optimal wear tester to evaluate the coeff. of friction, specific wear

rates, etc. The extent of damage, coeff. of friction, and specific wear rates decreased with increase in the percentage of LOME in the biodiesel blend. SEM was conducted on the surfaces exposed to wear. The disk and pin using 20% biodiesel blend as lubricating oil showed lesser damage compared to the one subjected to diesel oil as lubricating fluid, confirming addnl. lubricity of biodiesel.

ST linseed oil Me ester biodiesel; engine wear lubricating oil biodiesel
IT Diesel fuel substitutes

(biodiesel; wear assessment in a biodiesel fuelled compression
ignition engine)

IT Lubricating oils
(diesel; wear assessment in a biodiesel fuelled compression
ignition engine)

IT Fatty acids, uses
RL: NUU (Other use, unclassified); USES (Uses)
(linseed-oil, Me esters; wear assessment in a biodiesel
fuelled compression ignition engine)

IT Wear
(wear assessment in a biodiesel fuelled compression ignition
engine)

RE.CNT 11 THERE ARE 11 CITED REFERENCES AVAILABLE FOR THIS RECORD
RE

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L7 ANSWER 8 OF 56 CAPLUS COPYRIGHT 2002 ACS

Full Text

AN 2001:309850 CAPLUS

DN 134:313356

TI Alternative diesel fuels from vegetable oils and animal fats

AU Dunn, Robert O.; Knothe, Gerhard

CS Oil Chemical Research, Agricultural Research Service (ARS), National Center for Agricultural Utilization Research (NCAUR), U.S. Department of Agriculture (USDA), Peoria, IL, 61604, USA

SO Journal of Oleo Science (2001), 50(5), 415-426
CODEN: JOSOAP; ISSN: 1345-8957

PB Japan Oil Chemists' Society

DT Journal

LA English

CC 51-9 (Fossil Fuels, Derivatives, and Related Products)

AB Biodiesel, defined as the mono-alkyl esters of fatty acids derived from vegetable oils or animal fats, is a strong candidate alternative fuel for combustion in compression ignition (diesel) engines. With respect to petroleum middle distillates, biodiesel has superior cetane no. and lubricity characteristics, has comparable heats of combustion and kinematic viscosities, and is non-flammable making it safer to store and handle. Biodiesel is renewable and can help reduce dependence upon imported petroleum. Biodiesel is environmentally friendly because it is

readily biodegradable and its combustion reduces most harmful exhaust **emissions**, including carbon monoxide, unburned hydrocarbons, particulate matter, and polyarom. hydrocarbons. In the United States, the **Energy** Policy Act (EPACT) of 1992 and Clean Air Act with its subsequent amendments have combined to help establish a favorable atm. for development of biodiesel; however, many technol. hurdles must be removed before widespread commercialization will be feasible. During cooler weather, biodiesel "gels" at temps. near freezing (0°C) compared with - 15 to - 17°C for conventional diesel **fuel**. Another concern for biodiesel is its long-term storage stability with respect to oxidative degrdn. Finally, most reports indicate biodiesel does not significantly reduce nitrogen oxides (NOx) **emissions**. This is a particular concern because NOx may react in the atm. to form ozone, a component of smog. This work reviews recent progress in the development of biodiesel with emphasis on removing these technol. hurdles.

- ST biodiesel **fuel** property vegetable **oil** animal **fat**; combustion
- biodiesel compression **ignition** engine
- IT **Fats** and Glyceridic **oils**, processes
 - RL: PEP (Physical, engineering or chemical process); PROC (Process)
 - (animal; properties of alternative diesel **fuels** from
 - vegetable **oils** and animal **fats**)
- IT Air pollution
 - (biodiesel from vegetable **oils** and animal **fats** in
 - relation to)
- IT Diesel **fuel**
 - (biodiesel; properties of alternative diesel **fuels** from
 - vegetable **oils** and animal **fats**)
- IT Lubrication
 - (lubricity of biodiesel)
- IT Cetane number
 - (of biodiesel)
- IT Combustion
 - (of biodiesel in compression **ignition** engines)
- IT **Fats** and Glyceridic **oils**, processes
 - RL: PEP (Physical, engineering or chemical process); PROC (Process)
 - (vegetable; properties of alternative diesel **fuels** from
 - vegetable **oils** and animal **fats**)

RE.CNT 113 THERE ARE 113 CITED REFERENCES AVAILABLE FOR THIS RECORD
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L7 ANSWER 9 OF 56 CAPLUS COPYRIGHT 2002 ACS

Full Text

AN 2001:184652 CAPLUS

DN 134:328979

TI **Emission** testing on a biodiesel produced from waste animal **fats**

AU Koo, B. C. P.; Leung, D. Y. C.

CS Department of Mechanical Engineering, The University of Hong Kong, Hong Kong, Peop. Rep. China

SO Sustainable Energy and Environmental Technologies, Proceedings of the Asia-Pacific Conference, 3rd, Hong Kong, China, Dec. 3-6, 2000 (2001), Meeting Date 2000, 242-246. Editor(s): Hu, Xijun; Yue, Po Lock. Publisher: World Scientific Publishing Co. Pte. Ltd., Singapore, Singapore.

CODEN: 69AZSS

DT Conference

LA English

CC 52-1 (Electrochemical, Radiational, and Thermal Energy Technology) Section cross-reference(s): 45, 60

AB Biodiesel is a clean-burning fuel made from renewable sources. Technologies to produce biodiesel from neat vegetable oils, have been developed elsewhere for sometimes and biodiesel fuel is com. available in several countries including USA and Germany. The feasibility of using waste cooking oil (animal fats/vegetable oils) as feedstock of biodiesel was studied by us in 1999. This study was initiated due to the large amt. of waste oil generated by local restaurants, posing a heavy burden on the trade as well as on the municipal wastewater treatment

facilities. Preliminary tests were conducted on a 240 HP Cummins bus engine and a 5-ton lorry. The results of the tests were encouraging - smoke and air pollutants were reduced without any significant power penalty. A larger scale and comprehensive study on the characteristics of biodiesel on various engines is currently undertaken. In this paper, results on a diesel generator with different biodiesel/diesel blending ratios were presented. Air pollutants, such as nitrogen oxides and carbon monoxide, were measured by a combustion analyzer. The power output and fuel consumption were also recorded during the measurement.

ST air pollution exhaust biodiesel waste fat; animal waste fat restaurant transesterification biodiesel

IT **Fatty acids, uses**
 RL: NUU (Other use, unclassified); USES (Uses)
 (Me esters; **emission** testing on a biodiesel produced from waste animal fats)

IT **Fats and Glyceridic oils, processes**
 RL: PEP (Physical, engineering or chemical process); PROC (Process)
 (animal, waste, transesterification of; **emission** testing on a biodiesel produced from waste animal fats)

IT Diesel fuel substitutes
 (biodiesel; **emission** testing on a biodiesel produced from waste animal fats)

IT Combustion
 Transesterification
 (**emission** testing on a biodiesel produced from waste animal fats)

IT Air pollution
 (exhaust; **emission** testing on a biodiesel produced from waste animal fats)

IT **Fats and Glyceridic oils, processes**
 RL: PEP (Physical, engineering or chemical process); PROC (Process)
 (vegetable; **emission** testing on a biodiesel produced from waste animal fats)

IT 630-08-0, Carbon monoxide, occurrence 11104-93-1, Nitrogen oxide nox, occurrence
 RL: POL (Pollutant); OCCU (Occurrence)
 (**emission** testing on a biodiesel produced from waste animal fats)

RE.CNT 13 THERE ARE 13 CITED REFERENCES AVAILABLE FOR THIS RECORD

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L7 ANSWER 10 OF 56 CAPLUS COPYRIGHT 2002 ACS

Full Text

AN 2001:145332 CAPLUS

DN 134:165483

TI Fuel for compression ignition engines

IN Andel, Miroslav
 PA Czech Rep.
 SO Czech Rep., 15 pp.
 CODEN: CZXXED

DT Patent

LA Czech

IC ICM C10L001-08

ICS C10L001-10; C10L001-14

CC 51-9 (Fossil Fuels, Derivatives, and Related Products)

Section cross-reference(s): 52

FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	CZ 286005	B6	19991215	CZ 1993-1781	19930830
AB	Fuel for diesel engines consists of 10-90 rape oil Me ester (preferably 30-40) and 10-90 wt.% S-free middle petroleum distillate (preferably 60-70%). No harmful emissions are generated during combustion.				
ST	alternate fuel diesel engine				
IT	Fuels (alternative; for diesel engines)				
IT	Diesel fuel substitutes (biodiesel; rape oil Me ester)				
IT	Diesel fuel (blend with rape oil Me ester)				
IT	Fatty acids , uses RL: TEM (Technical or engineered material use); USES (Uses) (rape-oil, Me esters; rape oil Me ester as fuel for diesel engines)				

L7 ANSWER 11 OF 56 CAPLUS COPYRIGHT 2002 ACS

Full Text

AN 2000:903534 CAPLUS

DN 134:268663

TI The potential of using vegetable oil **fuels** as **fuel** for diesel engines

AU Altin, R.; Cetinkaya, S.; Yucesu, H. S.

CS Projects Coordination Unit, Ministry of Education, Ankara, 06500, Turk.

SO Energy Conversion and Management (2000), Volume Date 2001, 42(5), 529-538

CODEN: ECMADL; ISSN: 0196-8904

PB Elsevier Science Ltd.

DT Journal

LA English

CC 52-1 (Electrochemical, Radiational, and Thermal Energy Technology)

Section cross-reference(s): 45, 59

AB Vegetable **oils** are produced from numerous oil seed crops. While all vegetable **oils** have high **energy** content, most require some processing to assure safe use in internal combustion engines. Some of these **oils** already have been evaluated as substitutes for diesel **fuels**. The effects of vegetable oil **fuels** and their Me esters (raw sunflower oil, raw cottonseed oil, raw soybean oil and their Me esters, refined corn oil, distd. opium poppy oil and refined rapeseed oil) on a direct injected, four stroke, single cylinder diesel engine performance and exhaust **emissions** was investigated in this paper. The results show that from the performance viewpoint, both vegetable **oils** and their esters are promising alternatives as **fuel** for diesel engines. Because of their high viscosity, drying with time and thickening in cold conditions, vegetable oil **fuels** still have problems, such as flow, atomization and heavy particulate **emissions**.

ST vegetable oil methyl ester diesel **fuel**; exhaust air pollution diesel vegetable oil; sunflower cottonseed soybean corn oil ester; opium poppy rapeseed oil diesel **fuel**

IT Diesel **fuel** substitutes

- (biodiesel; potential of using vegetable oil fuels as fuel for diesel engines)
- IT **Fatty acids, uses**
 RL: NUU (Other use, unclassified); USES (Uses)
 (cottonseed-oil, Me esters; potential of using vegetable oil fuels as fuel for diesel engines)
- IT **Air pollution**
 (exhaust; potential of using vegetable oil fuels as fuel for diesel engines)
- IT **Fats and Glyceridic oils, uses**
 RL: NUU (Other use, unclassified); USES (Uses)
 (poppyseed; potential of using vegetable oil fuels as fuel for diesel engines)
- IT **Atomizing (spraying)**
 Combustion
 (potential of using vegetable oil fuels as fuel for diesel engines)
- IT **Corn oil**
Cottonseed oil
Rape oil
 RL: NUU (Other use, unclassified); USES (Uses)
 (potential of using vegetable oil fuels as fuel for diesel engines)
- IT **Fatty acids, uses**
 RL: NUU (Other use, unclassified); USES (Uses)
 (rape-oil, Me esters; potential of using vegetable oil fuels as fuel for diesel engines)
- IT **Fatty acids, uses**
 RL: NUU (Other use, unclassified); USES (Uses)
 (soya, Me esters; potential of using vegetable oil fuels as fuel for diesel engines)
- IT **Fatty acids, uses**
 RL: NUU (Other use, unclassified); USES (Uses)
 (sunflower-oil, Me esters; potential of using vegetable oil fuels as fuel for diesel engines)
- IT **Fats and Glyceridic oils, uses**
 RL: NUU (Other use, unclassified); USES (Uses)
 (vegetable; potential of using vegetable oil fuels as fuel for diesel engines)
- IT 630-08-0, Carbon monoxide, occurrence 10102-44-0, Nitrogen dioxide, occurrence
 RL: POL (Pollutant); OCCU (Occurrence)
 (potential of using vegetable oil fuels as fuel for diesel engines)
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L7 ANSWER 12 OF 56 CAPLUS COPYRIGHT 2002 ACS

Full Text

AN 2000:712590 CAPLUS

DN 133:254844

TI Reuse of used edible oils/fats in the energetic-technological area. A method and its evaluation

AU Suss, Ananta Andy Anggraini

CS Weimar, Germany

SO Fortschritt-Berichte VDI, Reihe 15: Umwelttechnik (1999), 219, I-III, V, VII-XIV, 1-193

CODEN: FRUMFB; ISSN: 0178-9589

PB VDI Verlag GmbH

DT Journal; General Review

LA German

CC 52-0 (Electrochemical, Radiational, and Thermal Energy Technology)

Section cross-reference(s): 17

AB A discussion and review with 166 refs. In the development of alternative **fuel** sources, used cooking oils have gained a high value as raw material for biofuel prodn. Although used cooking oils seem as animal feedstuffs economically more attractive, their toxic components restrict their use in animal nutrition sectors. Therefore, their use in the energetic-tech. sectors offers an environmentally far more attractive form of disposal and discovers simultaneously renewable **energy** sources. Because of their tech. and phys. properties, used cooking oils can not be used as direct replacements for diesel **fuel**. The suitability of used cooking oil as a **fuel** for diesel engines can be improved by appropriate transesterification. The unknown compn. and varying quality of used cooking oils, however, cause some problems on their use as a primary material for methylester **fuel** prodn. To realize this concept, it is necessary to develop and to optimize a technol., which is able to convert the used cooking oils into high quality Me ester **fuel**. Through the developed transesterification technol., used cooking oil methylesters (AME) can be produced in a quality close to existing stds. without expensive purifn. steps of the ester. Used cooking oils were transesterified by reaction at temps. between 20 and 70°C, on normal pressure, without excess methanol and under basic conditions. The catalyst, potassium hydroxide, should be exactly measured to adapt the transesterification process. The content of free **fatty acid** of raw material should not be more than 10% and the upper limit of impurities like mineral oil (from fossil resources) is 7.5%. If AME is used at temps. over 20°C, the animal fat content of the raw material can be accepted till 30%. **Fuel** properties of AME are remarkably similar to diesel **fuel**. Thus AME is suitable as **fuel** for diesel engines and for heating systems. Its m.p., however, is so high, that it can be used only at relatively high temps. To overcome this problem, AME needs to be modified to keep it in liq. form under colder conditions. A simple redn. of m.p. can be achieved by blending it with diesel **fuel**. This can be approached also by adding **fuel** additives. Heating the **fuel** might promise a possible soln. of this problem too. Darkness, lower temps. and anaerobic storage are suggested to guarantee a const. quality of AME for long term. It is also recommended, that storage period should not be longer than one year. The comparison between AME and rapeseed oil and its derivate showed that AME prodn. is less expensive and gives better **energy** balance. The other advantage is that there are no repeated agricultural activities in the prodn. steps, so that N2O-emissions from nitrogen decompn. are not produced. Just as rapeseed oil, the sulfur content of AME is basically zero. Therefore, no SO2-emission was obsd. during its **burning** in diesel engine and in a heating system. There was found also a redn. in particle **emissions**.

- ST review edible oil fat reuse biofuel biodiesel
- IT Diesel fuel substitutes
(biodiesel; reuse of used edible oils/fats in energetic-technol.)
- IT Fuels
(biofuels; reuse of used edible oils/fats in energetic-technol.)
- IT Diesel fuel substitutes
Energy balance
Recycling
(reuse of used edible oils/fats in energetic-technol.)
- IT Edible oils
Fats and Glyceridic oils, uses
RL: PEP (Physical, engineering or chemical process); TEM (Technical or engineered material use); PROC (Process); USES (Uses)
(reuse of used edible oils/fats in energetic-technol.)
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L7 ANSWER 13 OF 56 CAPLUS COPYRIGHT 2002 ACS

Full Text

AN 2000:511642 CAPLUS

DN 133:225280

TI Characterization of new **fuel** qualities

AU Nylund, Nils-Olof; Aakko, Paivi

CS Technical Research Centre of Finland, Finland

SO Society of Automotive Engineers, [Special Publication] SP (2000),

SP-1545(State of Alternative Fuel Technologies 2000), 97-106

CODEN: SAESA2; ISSN: 0099-5908

PB Society of Automotive Engineers

DT Journal

LA English

CC 51-9 (Fossil Fuels, Derivatives, and Related Products)

Section cross-reference(s): 52

AB Many standardized tests for evaluating **fuel** properties have originally been designed for screening straight-run hydrocarbon products. In the case of **fuels** blended with new components or treated with additives, the traditional test methods may give misleading results. The objective of the work was to evaluate the correlation between the results of standardized testing and of the real-life serviceability of new diesel **fuel** qualities. Combustion properties, properties affecting exhaust **emissions**, low-temp. performance and diesel **fuel** lubricity were studied. The test **fuel** matrix comprised of typical conventional hydrocarbon diesel **fuels**, low-**emission** hydrocarbon **fuels**, rapeseed and tall **oil** esters and ethanol-blended diesel **fuels**. The base **fuels** were blended with a cetane improver additive and some **fuels** also with a cold flow improver additive. Combustion and **emission** tests were carried out with a heavy-duty bus engine and a diesel passenger car. A farm tractor engine was used for cold-start testing. The traditional cetane no. measurement described well **ignition** delay of the heavy-duty engine at low and medium loads, but was more suitable for hydrocarbon

- fuels** than for alternative diesel **fuels**. Cetane no. measurement overestimated the effect of cetane improver, esp. for biodiesels. HFRR tests show that esters are effective lubricity additives. The cold startability of blends contg. esters improved with cold flow additives. The **ignition** properties of ethanol blended diesel **fuel** improved significantly when **ignition** improver additive was used.
- ST standardized test diesel **fuel** substitute; rapeseed tall oil ester ethanol **fuel**
- IT Diesel **fuel** substitutes
(biodiesel; characterization of substitute diesel **fuel** qualities)
- IT Cetane number
Combustion
Ignition
(characterization of substitute diesel **fuel** qualities)
- IT Air pollution
(exhaust; characterization of substitute diesel **fuel** qualities)
- IT **Fatty acids**, uses
RL: NUU (Other use, unclassified); USES (Uses)
(rape-oil, Me esters; characterization of substitute diesel **fuel** qualities)
- IT **Fatty acids**, uses
RL: NUU (Other use, unclassified); USES (Uses)
(tall-oil, Me esters; characterization of substitute diesel **fuel** qualities)
- IT 64-17-5, Ethanol, uses
RL: NUU (Other use, unclassified); USES (Uses)
(characterization of substitute diesel **fuel** qualities)
- IT 630-08-0, Carbon monoxide, occurrence
RL: POL (Pollutant); OCCU (Occurrence)
(characterization of substitute diesel **fuel** qualities)
- L7 ANSWER 14 OF 56 CAPLUS COPYRIGHT 2002 ACS
Full Text
- AN 2000:511635 CAPLUS
- DN 133:226873
- TI Optimising tractor C1 engines for biodiesel operation
- AU Bouche, Thomas; Hinz, Michael; Pittermann, Roland; Herrmann, Martin
- CS WTZ fur Motoren- und Maschinenforschung Rosslau GmbH, Germany
- SO Society of Automotive Engineers, [Special Publication] SP (2000), SP-1545(State of Alternative Fuel Technologies 2000), 57-64
CODEN: SAESA2; ISSN: 0099-5908
- PB Society of Automotive Engineers
- DT Journal
- LA English
- CC 59-3 (Air Pollution and Industrial Hygiene)
Section cross-reference(s): 47, 51
- AB This paper reports on test bed and field studies to adapt and optimize two John Deere tractor engines for **fatty acid** Me ester (biodiesel). **Emissions** were measured according to the international std. DIN EN ISO 8178-4, cycle C1, which is relevant for tractor engines. The results were compared to diesel **fuel** with and without optimization of the engine for biodiesel. It could be shown that total particulate **emissions** did not change much with biodiesel but there was a strong increase in the sol. org. fraction while soot strongly decreased simultaneously. Therefore, in order to take full advantage of biodiesel, the engines were also equipped with an oxidn. catalyst. Compared to diesel **fuel** operation of the engines with an oxidn. catalyst, the **emissions** of hydrocarbons, carbon monoxide, and particulates could be reduced with biodiesel, whereas nitrogen oxides increased slightly. During a 600 h durability run and a tractor field test, no **fuel**-related problems occurred, and a final

engine inspection showed components still to be in an excellent condition. The results of engine oil analyses during both durability tests are presented.

- ST tractor engine optimization biodiesel operation **emission** control
 IT Tractors
 (John Deer; optimizing tractor C1 engines for biodiesel operation)
 IT **Fatty acids**, uses
 RL: TEM (Technical or engineered material use); USES (Uses)
 (Me esters, biodiesel **fuel**; optimizing tractor C1 engines for biodiesel operation)
 IT Diesel **fuel** substitutes
 (biodiesel; optimizing tractor C1 engines for biodiesel operation)
 IT Air pollution
 (control; optimizing tractor C1 engines for biodiesel operation)
 IT Soot
 (**emission** of; optimizing tractor C1 engines for biodiesel operation)
 IT Hydrocarbons, occurrence
 RL: POL (Pollutant); OCCU (Occurrence)
 (**emission** of; optimizing tractor C1 engines for biodiesel operation)
 IT Air pollution
 (exhaust; optimizing tractor C1 engines for biodiesel operation)
 IT Standards, legal and permissive
 (for exhaust **emissions**, compliance with; optimizing tractor C1 engines for biodiesel operation)
 IT Diesel engines
 Exhaust particles (engine)
 Optimization
 Oxidation catalysts
 (optimizing tractor C1 engines for biodiesel operation)
 IT Internal combustion engines
 (spark-**ignition**; optimizing tractor C1 engines for biodiesel operation)
 IT 630-08-0, Carbon monoxide, occurrence 11104-93-1, Nitrogen oxide (NOx), occurrence
 RL: POL (Pollutant); OCCU (Occurrence)
 (**emission** of; optimizing tractor C1 engines for biodiesel operation)

RE.CNT 24 THERE ARE 24 CITED REFERENCES AVAILABLE FOR THIS RECORD
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 (LT2/87) 1991

L7 ANSWER 15 OF 56 CAPLUS COPYRIGHT 2002 ACS

Full Text

AN 2000:433256 CAPLUS

DN 133:61158

TI Lipid vesicle-based **fuel** additives and liquid **energy** sources
containing same

IN Mathur, Rajiv

PA Igen, Inc., USA

SO U.S., 8 pp.

CODEN: USXXAM

DT Patent

LA English

IC ICM C10L001-14

ICS C10L001-32

NCL 044301000

CC 51-7 (Fossil Fuels, Derivatives, and Related Products)

FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	US 6080211	A	20000627	US 1999-252546	19990219
	WO 2000049108	A1	20000824	WO 2000-US4126	20000217
	W:		AE, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, CA, CH, CN, CR, CU, CZ, DE, DK, DM, EE, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, NO, NZ, PL, PT, RO, RU, SD, SE, SG, SI, SK, SL, TJ, TM, TR, TT, TZ, UA, UG, UZ, VN, YU, ZA, ZW, AM, AZ, BY, KG, KZ, MD, RU, TJ, TM		
	RW:		GH, GM, KE, LS, MW, SD, SL, SZ, TZ, UG, ZW, AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE, BF, BJ, CF, CG, CI, CM, GA, GN, GW, ML, MR, NE, SN, TD, TG		
	EP 1159377	A1	20011205	EP 2000-913511	20000217
	R:		AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT, IE, SI, LT, LV, FI, RO		
	JP 2002537438	T2	20021105	JP 2000-599839	20000217
	US 6371998	B1	20020416	US 2000-602732	20000626
PRAI	US 1999-252546	A	19990219		
	WO 2000-US4126	W	20000217		
AB	Liq. energy sources, e.g., liq. fuels comprising lipid vesicles having fuel additives such as water are disclosed herein. The liq. energy sources, methods for prepn., and methods of enhancing engine performance disclosed herein employing the lipid vesicles result in enhanced fuel efficiency and/or lowered engine emissions . The invention further relates to liq. energy sources contg. such additives which further comprise a polymeric dispersion assistant, which reduces the interfacial tension and coalescence of vesicles during dispersion process and storage, and thereby provide transparent looks to the liq. energy source.				
ST	liq fuel lipid vesicle manuf				
IT	Fuels (alternative; lipid vesicle-based fuel additives and liq. energy sources contg. same)				
IT	Diesel fuel substitutes (biodiesel; lipid vesicle-based fuel additives and liq. energy sources contg. same)				
IT	Fatty acids , uses				

- RL: MOA (Modifier or additive use); USES (Uses)
(esters; lipid vesicle-based **fuel** additives and liq.
energy sources contg. same)
- IT Alcohols, uses
RL: MOA (Modifier or additive use); USES (Uses)
(fatty; lipid vesicle-based **fuel** additives and liq.
energy sources contg. same)
- IT Diesel **fuel**
Dispersion (of materials)
Fuel additives
Jet aircraft **fuel**
Vesicles (colloidal)
Waters
(lipid vesicle-based **fuel** additives and liq. **energy**
sources contg. same)
- IT Glycosides
Lipids, uses
Phosphatidic acids
Phosphatidylserines
Soybean **oil**
RL: MOA (Modifier or additive use); USES (Uses)
(lipid vesicle-based **fuel** additives and liq. **energy**
sources contg. same)
- IT Gasoline
RL: TEM (Technical or engineered material use); USES (Uses)
(lipid vesicle-based **fuel** additives and liq. **energy**
sources contg. same)
- IT Kerosene
RL: TEM (Technical or engineered material use); USES (Uses)
(lipid vesicle-based **fuel** additives and liq. **energy**
sources contg. same)
- IT **Fuels**
(liq.; lipid vesicle-based **fuel** additives and liq.
energy sources contg. same)
- IT Amines, uses
RL: MOA (Modifier or additive use); USES (Uses)
(oleylamines and stearylamine; lipid vesicle-based **fuel**
additives and liq. **energy** sources contg. same)
- IT Sterols
RL: MOA (Modifier or additive use); USES (Uses)
(phytosterols; lipid vesicle-based **fuel** additives and liq.
energy sources contg. same)
- IT **Fatty acids**, uses
RL: MOA (Modifier or additive use); USES (Uses)
(soya, Me esters; lipid vesicle-based **fuel** additives and liq.
energy sources contg. same)
- IT 50-23-7, Hydrocortisone 57-10-3, Palmitic acid, uses 57-11-4, Stearic
acid, uses 57-88-5, Cholesterol, uses 57-88-5D, Cholesterol, derivs.
64-17-5, Ethanol, uses 94-13-3, Propyl paraben 99-76-3, Methyl paraben
108-10-1, Methyl isobutyl ketone 112-80-1, Oleic acid, uses 124-28-7,
Dimethylstearyl amine 143-02-2, Cetyl sulfate 143-07-7, Lauric acid,
uses 302-01-2, Hydrazine, uses 1323-39-3, Propylene glycol stearate
1323-83-7, Glycerol distearate 2197-63-9, Dicetyl phosphate 7722-84-1,
Hydrogen peroxide, uses 9005-00-9, STEARETH-10 25618-55-7,
Polyglycerol 27195-16-0, Sucrose distearate 27638-00-2, Glyceryl
dilaurate 106392-12-5, Polyoxyethylene-polyoxypropylene block copolymer
RL: MOA (Modifier or additive use); USES (Uses)
(lipid vesicle-based **fuel** additives and liq. **energy**
sources contg. same)
- RE.CNT 22 THERE ARE 22 CITED REFERENCES AVAILABLE FOR THIS RECORD
- RE
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L7 ANSWER 16 OF 56 CAPLUS COPYRIGHT 2002 ACS

Full Text

AN 2000:410393 CAPLUS

DN 133:19936

TI **Fuel** for compression **ignition** engines

IN Andel, Miroslav

PA Czech Rep.

SO Czech Rep., 24 pp.

CODEN: CZXXED

DT Patent

LA Czech

IC ICM C10L001-08

ICS C10L001-18; C10L001-16

CC 51-9 (Fossil Fuels, Derivatives, and Related Products)

Section cross-reference(s): 52

FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
	-----	----	-----	-----	-----
PI	CZ 285470	B6	19990811	CZ 1994-762	19940331
AB	Fuel for diesel engines consists of 10-90 (preferably 30-40) rapeseed oil Me ester and 10-90 wt.% (preferably 60-70%) petroleum fraction with a mean distn. temp. of 200.4° and low contents of S and arom. compds. The fuel is bio-degradable and does not generate harmful emissions during combustion.				
ST	diesel fuel rape oil methyl ester				
IT	Diesel fuel (modified with rapeseed oil Me ester)				
IT	Fatty acids , uses RL: TEM (Technical or engineered material use); USES (Uses) (rape-oil, Me esters; in fuel for compression ignition engines)				

L7 ANSWER 17 OF 56 CAPLUS COPYRIGHT 2002 ACS

Full Text

AN 2000:400052 CAPLUS

DN 133:47990

TI **Energy** consumption and exhaust **emissions** in mechanized timber harvesting operations in Sweden

AU Athanassiadis, D.

CS Department of Silviculture, Faculty of Forestry, Division of Forest

- Technology, Swedish University of Agricultural Sciences, Umea, 90183, Swed.
- SO Science of the Total Environment (2000), 255(1-3), 135-143
CODEN: STENDL; ISSN: 0048-9697
- PB Elsevier Science Ireland Ltd.
- DT Journal
- LA English
- CC 59-2 (Air Pollution and Industrial Hygiene)
- AB The study presents an estn. of the **energy** input and the amt. of **emissions** to air due to **fuel**, chainsaw and hydraulic **oil** consumption by heavy duty diesel engine vehicles operating in forest logging operations in Sweden. Exhaust concns. are given for carbon dioxide, carbon monoxide, nitrogen oxides, hydrocarbons and particulate matter. Three **fuel** types (rapeseed Me ester, environmental class 1 and environmental class 3 diesel **fuels**) and two types of lubricating base **oil** (mineral- and vegetable-based) were examd. **Energy** input per unit of timber prodn. (m3ub) was 82 MJ, 11% of which was due to **energy** consumption during the prodn. phase of the **fuel**. **Emissions** during the whole life cycle of the **fuels** and the base **oils** are included in the study. The highest CO2 and NOx **emissions** occurred when rapeseed Me ester was used as **fuel** together with rapeseed as base **oil** for chainsaw and hydraulic **oil**. The highest HC and CO **emissions** occurred when environmental class 3 diesel **fuel** was used.
- ST timber harvesting **energy** consumption exhaust **emission**
- IT Exhaust gases (engine)
(diesel; **energy** consumption and exhaust **emissions** in mechanized timber harvesting in Sweden)
- IT Diesel **fuel**
Energy
Lubricating **oils**
Wood
(**energy** consumption and exhaust **emissions** in mechanized timber harvesting in Sweden)
- IT Hydrocarbons, occurrence
RL: POL (Pollutant); OCCU (Occurrence)
(**energy** consumption and exhaust **emissions** in mechanized timber harvesting in Sweden)
- IT **Fatty acids**, uses
RL: NUU (Other use, unclassified); USES (Uses)
(rape-oil, Me esters; **energy** consumption and exhaust **emissions** in mechanized timber harvesting in Sweden)
- IT 124-38-9, Carbon dioxide, occurrence 630-08-0, Carbon monoxide, occurrence 11104-93-1, Nitrogen oxide, occurrence
RL: POL (Pollutant); OCCU (Occurrence)
(**energy** consumption and exhaust **emissions** in mechanized timber harvesting in Sweden)
- RE.CNT 34 THERE ARE 34 CITED REFERENCES AVAILABLE FOR THIS RECORD
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L7 ANSWER 18 OF 56 CAPLUS COPYRIGHT 2002 ACS

Full Text

AN 1999:792645 CAPLUS
 DN 132:66380
 TI Sunflower methyl ester as a fuel for automobile diesel engines
 AU Moreno, F.; Munoz, M.; Morea-Roy, J.
 CS Laboratorio de Motores, Departamento de Ingenieria Mecanica, Centro Politecnico Superior, Universidad de Zaragoza, Maria de Luna, Zaragoza, 50015, Spain
 SO Transactions of the ASAE (1999), 42(5), 1181-1185
 CODEN: TAAEJ; ISSN: 0001-2351
 PB American Society of Agricultural Engineers
 DT Journal
 LA English
 CC 51-9 (Fossil Fuels, Derivatives, and Related Products)
 Section cross-reference(s): 45, 52, 59
 AB Results were presented for tests on an automobile diesel engine running on sunflower oil Me ester (SME), either pure and mixed (25-75 wt.%) with diesel fuel. Engine test bench studies were carried out in order to obtain comparison measurements of torque, power, specific fuel consumption, and pollutant emissions. No noticeable power loss was obsd., compared with pure diesel fuel, for fuel mixts. contg. 25-75 wt.% SME, although a slight loss (1.5%) of power was obsd. with pure SME. Emissions of unburned hydrocarbons decreased when using pure SME or SME mixts.; the NOx emissions decreased when using SME-diesel fuel mixts. up to 85% SME. NOx emissions were 5% higher (compared with pure diesel fuel) when pure SME was used.
 ST sunflower oil methyl ester diesel fuel; hydrocarbon emission
 sunflower oil methyl ester diesel; nitrogen oxide sunflower oil methyl

- ester diesel
- IT Hydrocarbons, occurrence
 RL: POL (Pollutant); OCCU (Occurrence)
 (emissions; engine test bench studies of automobile diesel engines **burning** sunflower oil Me ester substitute)
- IT Diesel **fuel** substitutes
 (engine test bench studies of automobile diesel engines **burning** sunflower oil Me ester substitute)
- IT Combustion
 (of sunflower oil Me esters; engine test bench studies of automobile diesel engines **burning** sunflower oil Me ester substitute)
- IT **Fatty acids**, uses
 RL: NUU (Other use, unclassified); RCT (Reactant); RACT (Reactant or reagent); USES (Uses)
 (sunflower-oil, Me esters, diesel **fuel** substitute; engine test bench studies of automobile diesel engines **burning** sunflower oil Me ester substitute)
- IT 630-08-0, Carbon monoxide, occurrence 11104-93-1, Nitrogen oxide (NOx), occurrence
 RL: POL (Pollutant); OCCU (Occurrence)
 (emissions; engine test bench studies of automobile diesel engines **burning** sunflower oil Me ester substitute)
- RE.CNT 10 THERE ARE 10 CITED REFERENCES AVAILABLE FOR THIS RECORD
- RE
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- L7 ANSWER 19 OF 56 CAPLUS COPYRIGHT 2002 ACS
- Full Text
- AN 1999:630353 CAPLUS
- DN 131:261738
- TI Vegetable **oils** for biofuels versus surfactants. An ecological comparison for **energy** and greenhouse gases
- AU Patel, Martin; Reinhardt, Guido A.; Zemanek, Guido
- CS Fraunhofer Institute Systems Innovation Research, Karlsruhe, D-76139, Germany
- SO Fett/Lipid (1999), 101(9), 314-320
 CODEN: FELIFX; ISSN: 0931-5985
- PB Wiley-VCH Verlag GmbH
- DT Journal
- LA English
- CC 59-2 (Air Pollution and Industrial Hygiene)
 Section cross-reference(s): 46, 52
- AB The use of vegetable **oils** as **energy** carriers and for the prodn. of chems. is compared. The bio-based **energy** carriers analyzed are rapeseed **oil**, rapeseed **oil** Me ester, and palm **oil** Me ester, all of which can be used as substitutes for diesel **fuel**. The chems. studied are surfactants. Surfactants can be produced from plant-based feedstocks (oleochem. surfactants) and from petrochems. The various options are studied with regard to two ecol. indicators, i.e. the consumption of finite **energy** resources and the global warming potential. Plant-based sources show clear advantages when compared with their fossil

- counterparts. The transesterified types of biofuels are more advantageous than pure vegetable oils. The conservation of finite **energy** and redn. in **emissions** of greenhouse gases are higher if vegetable oils are used as a feedstock to produce oleochem. surfactants compared to their use as biofuels. Comprehensive life-cycle analyses must be carried out in order to det. whether these results can also be applied to other ecol. indicators. The results support developing strategic goals for bio-based feedstocks, including quantity and cost targets.
- ST environmental impact vegetable oil biofuel comparison surfactant;
energy conservation greenhouse effect vegetable oil biofuel surfactant
- IT Sulfonates
 RL: NUU (Other use, unclassified); PRP (Properties); USES (Uses)
 (alkanesulfonates, secondary; ecol. comparison of vegetable oils for biofuels vs. surfactants regarding **energy** conservation and greenhouse gases)
- IT **Fuels**
 (biofuels; ecol. comparison of vegetable oils for biofuels vs. surfactants regarding **energy** conservation and greenhouse gases)
- IT Diesel fuel substitutes
Energy conservation
 Greenhouse gases
 Surfactants
 (ecol. comparison of vegetable oils for biofuels vs. surfactants regarding **energy** conservation and greenhouse gases)
- IT Sulfates, uses
 RL: NUU (Other use, unclassified); PRP (Properties); USES (Uses)
 (ecol. comparison of vegetable oils for biofuels vs. surfactants regarding **energy** conservation and greenhouse gases)
- IT Rape oil
 RL: PRP (Properties); TEM (Technical or engineered material use); USES (Uses)
 (ecol. comparison of vegetable oils for biofuels vs. surfactants regarding **energy** conservation and greenhouse gases)
- IT **Fatty acids**, uses
 RL: PRP (Properties); TEM (Technical or engineered material use); USES (Uses)
 (esters, palm oil, Me esters; ecol. comparison of vegetable oils for biofuels vs. surfactants regarding **energy** conservation and greenhouse gases)
- IT Alcohols, uses
 RL: NUU (Other use, unclassified); PRP (Properties); USES (Uses)
 (ethoxylated; ecol. comparison of vegetable oils for biofuels vs. surfactants regarding **energy** conservation and greenhouse gases)
- IT Climate
 (greenhouse effect; ecol. comparison of vegetable oils for biofuels vs. surfactants regarding **energy** conservation and greenhouse gases)
- IT **Fats** and Glyceridic oils, uses
 RL: PRP (Properties); TEM (Technical or engineered material use); USES (Uses)
 (vegetable; ecol. comparison of vegetable oils for biofuels vs. surfactants regarding **energy** conservation and greenhouse gases)
- IT 98-11-3D, Benzenesulfonic acid, alkyl derivs., linear, uses
 RL: NUU (Other use, unclassified); PRP (Properties); USES (Uses)
 (ecol. comparison of vegetable oils for biofuels vs. surfactants regarding **energy** conservation and greenhouse

gases)

IT 74-82-8, Methane, occurrence 124-38-9, Carbon dioxide, occurrence
10024-97-2, Nitrogen oxide (N2O), occurrence
RL: POL (Pollutant); OCCU (Occurrence)
(ecol. comparison of vegetable oils for biofuels vs.
surfactants regarding **energy** conservation and greenhouse
gases)

IT 192391-56-3, RME
RL: PRP (Properties); TEM (Technical or engineered material use); USES
(Uses)
(ecol. comparison of vegetable oils for biofuels vs.
surfactants regarding **energy** conservation and greenhouse
gases)

RE.CNT 21 THERE ARE 21 CITED REFERENCES AVAILABLE FOR THIS RECORD

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L7 ANSWER 20 OF 56 CAPLUS COPYRIGHT 2002 ACS

Full Text

AN 1999:352381 CAPLUS

DN 131:90083

TI Conversion of vegetable oils to diesel fuel

AU Kotowski, Włodzimierz; Fechner, Wolfgang

CS Inst. Cieskiej Syntezy Org., Politech. Opolska, Kedzierzyn-Kozle, Pol.

SO Karbo (1999), 44(2), 69-74
CODEN: KARBFZ

PB Wiadomości Gornicze Sp. z o.o.

DT Journal

LA Polish

CC 52-1 (Electrochemical, Radiational, and Thermal Energy Technology)
Section cross-reference(s): 45

AB A technol. for processing rape oil into an ecol. oil for Otto engines

has been described. It was characterized several operations concerning the processing of gas oil of petroleum origin as well as the processing of vegetable oil into an ecol. engine fuel. Energy balances for these processes and accompanied emissions of toxic substances into atm. have been presented.

- ST rape oil transesterification methanol diesel fuel; vegetable oil transesterification methanol diesel fuel
- IT Transesterification
(Me; conversion of vegetable oils to diesel fuel)
- IT Diesel fuel substitutes
(biodiesel; conversion of vegetable oils to diesel fuel)
- IT Diesel fuel
(conversion of vegetable oils to diesel fuel)
- IT Fatty acids, uses
RL: NUU (Other use, unclassified); PNU (Preparation, unclassified); PREP (Preparation); USES (Uses)
(rape-oil, Me esters; conversion of vegetable oils to diesel fuel)
- IT Rape oil
RL: PEP (Physical, engineering or chemical process); PROC (Process)
(transesterification of; conversion of vegetable oils to diesel fuel)
- IT Fats and Glyceridic oils, processes
RL: PEP (Physical, engineering or chemical process); PROC (Process)
(vegetable, transesterification of; conversion of vegetable oils to diesel fuel)
- IT Fatty acids, uses
RL: NUU (Other use, unclassified); PNU (Preparation, unclassified); PREP (Preparation); USES (Uses)
(vegetable-oil, Me esters; conversion of vegetable oils to diesel fuel)
- IT 67-56-1, Methanol, uses
RL: NUU (Other use, unclassified); USES (Uses)
(transesterification with; conversion of vegetable oils to diesel fuel)

L7 ANSWER 21 OF 56 CAPLUS COPYRIGHT 2002 ACS

Full Text

AN 1999:327609 CAPLUS

DN 131:48436

TI Effects of rapeseed oil fuel properties on exhaust emissions of a swirl-chamber diesel engine

AU Hamasaki, Kazunori; Ohsako, Takanobu; Kinoshita, Eiji; Takasaki, Koji

CS Faculty of Engineering, Kagoshima University, Kagoshima-shi, Korimoto, 890-0065, Japan

SO Nippon Kikai Gakkai Ronbunshu, B-hen (1999), 65(631), 1146-1151

CODEN: NKGBDD; ISSN: 0387-5016

PB Nippon Kikai Gakkai

DT Journal

LA Japanese

CC 59-3 (Air Pollution and Industrial Hygiene)

Section cross-reference(s): 45

AB Due to the increasing interest in the CO2 problem, the request for alternative fuels from regenerated vegetable energy sources is increasing. The present work describes the results of expts. using rapeseed oil, emulsified rapeseed oil, rapeseed oil Me ester, and gas oil in a swirl-chamber diesel engine. The results show that the viscosity of rapeseed oil Me ester is a little higher than that of gas oil and that the smoke concn. with rapeseed oil Me ester is about 50% lower than that with gas oil. Furthermore, NOx and smoke concns. with emulsified rapeseed oil are lower than those with gas oil and energy

- consumption is similar to that in the case of operation with gas oil and rapeseed oil Me ester.
- ST diesel engine exhaust **fuel** rapeseed oil Me ester
- IT Exhaust gases (engine)
(diesel; effects of rapeseed oil **fuel** properties on exhaust **emissions** of a swirl-chamber diesel engine)
- IT Diesel **fuel**
Exhaust particles (engine)
Gas **oils**
(effects of rapeseed oil **fuel** properties on exhaust **emissions** of a swirl-chamber diesel engine)
- IT Rape **oil**
RL: NUU (Other use, unclassified); PRP (Properties); TEM (Technical or engineered material use); USES (Uses)
(effects of rapeseed oil **fuel** properties on exhaust **emissions** of a swirl-chamber diesel engine)
- IT **Fatty acids**, uses
RL: NUU (Other use, unclassified); PRP (Properties); TEM (Technical or engineered material use); USES (Uses)
(rape-oil, Me esters; effects of rapeseed oil **fuel** properties on exhaust **emissions** of a swirl-chamber diesel engine)
- IT 124-38-9, Carbon dioxide, formation (nonpreparative) 11104-93-1, Nitrogen oxide, formation (nonpreparative)
RL: FMU (Formation, unclassified); POL (Pollutant); FORM (Formation, nonpreparative); OCCU (Occurrence)
(effects of rapeseed oil **fuel** properties on exhaust **emissions** of a swirl-chamber diesel engine)
- L7 ANSWER 22 OF 56 CAPLUS COPYRIGHT 2002 ACS
Full Text
- AN 1999:318266 CAPLUS
- DN 130:340543
- TI Methyl esters of sunflower oil as **fuels**. Alternative to petroleum-derived diesel **fuel**
- AU Vicente, G.; Martinez, M.; Aracil, J.
- CS Dpto. de Ingenieria Quimica. Facultad de Ciencias Quimicas. Universidad Complutense de Madrid, Spain
- SO Ingenieria Quimica (Madrid) (1999), 31(355), 153-159
CODEN: INQUDI; ISSN: 0210-2064
- PB Ingenieria Quimica, S.A.
- DT Journal
- LA Spanish
- CC 52-1 (Electrochemical, Radiational, and Thermal Energy Technology)
Section cross-reference(s): 51, 59
- AB The properties, combustion characteristics, advantages, and prodn. technologies involved in the use of Me esters of sunflower oil **fatty acids** as alternatives to diesel **fuel** are discussed. The **oil** is extd. from the seeds, refined and subjected to transesterification. The combustion properties of the biodiesel are compared to those of diesel **fuels**. Exhaust **emissions** show reduced levels of CO, SO₂, particles, aroms., hydrocarbons, and increased levels of aldehydes.
- ST sunflower oil Me ester biodiesel
- IT Diesel **fuel** substitutes
Diesel **fuel** substitutes
(biodiesel; sunflower oil Me esters as alternative **fuels** to petroleum-derived diesel **fuel**)
- IT Cetane number
Combustion enthalpy
Density
Exhaust gases (engine)
Exhaust particles (engine)

Ignition point
 Transesterification
 Viscosity
 (sunflower oil Me esters as alternative **fuels** to petroleum-derived diesel **fuel**)

IT Aldehydes, occurrence
 Aromatic hydrocarbons, occurrence
 Hydrocarbons, occurrence
 RL: POL (Pollutant); OCCU (Occurrence)
 (sunflower oil Me esters as alternative **fuels** to petroleum-derived diesel **fuel**)

IT **Fatty acids**, uses
 RL: IMF (Industrial manufacture); PRP (Properties); TEM (Technical or engineered material use); PREP (Preparation); USES (Uses)
 (sunflower-oil, Me esters; sunflower oil Me esters as alternative **fuels** to petroleum-derived diesel **fuel**)

IT 630-08-0, Carbon monoxide, occurrence 7446-09-5, Sulfur dioxide, occurrence 11104-93-1, Nitrogen oxide, occurrence
 RL: POL (Pollutant); OCCU (Occurrence)
 (sunflower oil Me esters as alternative **fuels** to petroleum-derived diesel **fuel**)

RE.CNT 12 THERE ARE 12 CITED REFERENCES AVAILABLE FOR THIS RECORD
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L7 ANSWER 23 OF 56 CAPLUS COPYRIGHT 2002 ACS
Full Text
 AN 1999:302394 CAPLUS
 DN 131:21253
 TI Recent advances in the development of alternative diesel **fuel** from vegetable **oils** and animal **fats**
 AU Dunn, R. O.; Knothe, G.; Bagby, M. O.
 CS Oil Chemical Research, National Center for Agricultural Utilization Research, U.S. Department of Agriculture, Agricultural Research Service, Peoria, IL, 61604, USA
 SO Recent Research Developments in Oil Chemistry (1997), 1, 31-56
 CODEN: RROCFE
 PB Transworld Research Network
 DT Journal; General Review
 LA English
 CC 52-0 (Electrochemical, Radiational, and Thermal Energy Technology)
 Section cross-reference(s): 17, 51, 59
 AB Interest in utilizing vegetable **oils** and animal **fats** (triglycerides) as alternative **fuels** for compression-ignition (diesel) engines has increased in the past 10 to 15 yr. Triglycerides have many **fuel** properties including heat of combustion, cetane no., high flash temp. and good lubricity that make them attractive as **fuels** or extenders. Triglycerides are renewable, biodegradable and cleaner **burning** than conventional diesel **fuels**. However, engine tests have shown that

extended use of triglycerides as diesel fuels leads to problems such as injector coking, ring carbonization and crankcase lubricant contamination. These problems were attributable to incomplete combustion and poor fuel atomization, conditions directly related to the relatively high viscosity of triglycerides. Diln. with conventional diesel fuel, transesterification with alc., emulsification or co-solvent blending and pyrolyzation have been examd. as methods for reducing viscosity. At present, transesterification has made the most progress towards commercialization. As a result, mono-alkyl esters of fatty acids from transesterified vegetable oils or animal fats are defined as biodiesel in the US. This work reviews, with 119 refs., development of alternative diesel fuels and extenders from triglycerides. Recent advances in improving low-temp. flow properties, fuel ignition quality and exhaust emissions are discussed.

ST review alternative diesel fuel vegetable oil; animal fat alternative diesel review; biodiesel vegetable oil animal fat review

IT Fats and Glyceridic oils, reactions

RL: RCT (Reactant); RACT (Reactant or reagent)
(animal; recent advances in development of alternative diesel fuel from vegetable oils and animal fats)

IT Diesel fuel substitutes

(biodiesel; recent advances in development of alternative diesel fuel from vegetable oils and animal fats)

IT Glycerides, reactions

RL: RCT (Reactant); RACT (Reactant or reagent)
(recent advances in development of alternative diesel fuel from vegetable oils and animal fats)

IT Fats and Glyceridic oils, reactions

RL: RCT (Reactant); RACT (Reactant or reagent)
(vegetable; recent advances in development of alternative diesel fuel from vegetable oils and animal fats)

RE.CNT 119 THERE ARE 119 CITED REFERENCES AVAILABLE FOR THIS RECORD
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L7 ANSWER 24 OF 56 CAPLUS COPYRIGHT 2002 ACS

Full Text

AN 1999:150233 CAPLUS

DN 130:256284

TI Biodiesel exhaust **emissions** and determination of their environmental and health effects

AU Krahel, Jurgen; Bunger, Jurgen; Munack, Axel

CS Bundesforschungsanstalt fur Landwirtschaft Braunschweig-Volkenrode (FAL), Braunschweig, 38116, Germany

- SO Plant Oils as Fuels: Present State of Science and Future Developments, Proceedings of the Symposium, Potsdam, Feb. 16-18, 1997 (1998), Meeting Date 1997, 104-122. Editor(s): Martini, Norbert; Schell, Jozef S. Publisher: Springer, Berlin, Germany.
CODEN: 67HXAP
- DT Conference; General Review
- LA English
- CC 59-0 (Air Pollution and Industrial Hygiene)
Section cross-reference(s): 4, 52
- AB A review with 34 refs. In Europe, the use of rapeseed oil fuels in diesel engines has been intensively investigated since the **energy** crisis of the early 1970s. In the beginning, the emphasis was placed on the tech. possibilities assocd. with the use of rapeseed oil as a fuel. However, research has shown that pure rapeseed oil can only be used in specially designed engines. Research that followed indicated that rapeseed oil Me ester (RME) was a suitable replacement for petroleum diesel fuel (DF). After this discovery, research has focused on the engine exhaust **emissions** that result when fueling with both unmodified rapeseed oil and RME. In the USA, research has focused on soybean oil Me ester (SME). Both RME and SME are called biodiesel. In Germany biodiesel must fulfill the std. DIN V 51606. Initially, environmental related research concd. on the federally regulated hydrocarbons (HCs), carbon monoxide, and NOx exhaust gas **emission**. In addn., a series of current publications compare the environmentally important but nonregulated polycyclic arom. hydrocarbons (PAHs), aldehydes, ketones, and, in some cases, the arom. compds.
- ST review biodiesel exhaust health environmental hazard
- IT Polycyclic compounds
RL: ADV (Adverse effect, including toxicity); POL (Pollutant); BIOL (Biological study); OCCU (Occurrence)
(arom. hydrocarbons; biodiesel exhaust gas **emissions** and detn. of their environmental and health effects)
- IT Air pollution
(biodiesel exhaust gas **emissions** and detn. of their environmental and health effects)
- IT Aldehydes, biological studies
Aromatic compounds
Hydrocarbons, biological studies
Ketones, biological studies
RL: ADV (Adverse effect, including toxicity); POL (Pollutant); BIOL (Biological study); OCCU (Occurrence)
(biodiesel exhaust gas **emissions** and detn. of their environmental and health effects)
- IT Exhaust particles (engine)
Fuels
Soot
(biodiesel; biodiesel exhaust gas **emissions** and detn. of their environmental and health effects)
- IT Air pollution
(exhaust, biodiesel; biodiesel exhaust gas **emissions** and detn. of their environmental and health effects)
- IT Aromatic hydrocarbons, biological studies
RL: ADV (Adverse effect, including toxicity); POL (Pollutant); BIOL (Biological study); OCCU (Occurrence)
(polycyclic; biodiesel exhaust gas **emissions** and detn. of their environmental and health effects)
- IT **Fatty acids**, miscellaneous
RL: MSC (Miscellaneous)
(rape-oil, Me esters, biodiesel fuel; biodiesel exhaust gas **emissions** and detn. of their environmental and health effects)
- IT 630-08-0, Carbon monoxide, biological studies 11104-93-1, Nitrogen oxide

(NOx), biological studies

RL: ADV (Adverse effect, including toxicity); POL (Pollutant); BIOL (Biological study); OCCU (Occurrence)

(biodiesel exhaust gas emissions and detn. of their environmental and health effects)

RE.CNT 34 THERE ARE 34 CITED REFERENCES AVAILABLE FOR THIS RECORD
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L7 ANSWER 25 OF 56 CAPLUS COPYRIGHT 2002 ACS

Full Text

AN 1998:753035 CAPLUS

DN 130:85189
 TI Exhaust **emissions** of waste plant oil methylester as diesel fuel
 AU Nakazawa, Makoto; Sagiyama, Takashi; Suzuki, Masaaki; Hasegawa, Atsuko
 CS Air Quarity Division, Kanagawa Environmental Research Center, Japan
 SO Kanagawa-ken Kankyo Kagaku Senta Kenkyu Hokoku (1997), 20, 15-19
 CODEN: KKHOEP; ISSN: 0917-8279
 PB Kanagawa-ken Kankyo Kagaku Senta
 DT Journal
 LA Japanese
 CC 59-3 (Air Pollution and Industrial Hygiene)
 Section cross-reference(s): 17, 51, 60
 AB Exhaust **emissions** from diesel engines **burning** waste vegetable oil
 methylester as **fuels** are characterized by lower black smoke and
 hydrocarbon **emissions**, as compared to **burning** light oils. Nitrogen
 oxides and carbon dioxide **emissions** were slightly higher. HCHO
emission was slightly higher before engine warm-up; but lower after the
 warm-up. Particulate **emissions** were higher.
 ST waste plant oil methylester diesel engine; vegetable oil methylester
 fuel diesel exhaust
 IT Diesel engines
 Exhaust gases (engine)
 Fuel oil
 (exhaust **emissions** of waste plant oil methylester
 as diesel fuel)
 IT Wastes
 (vegetable oil methylester; exhaust **emissions** of
 waste plant oil methylester as diesel fuel)
 IT **Fatty acids**, uses
 RL: NUU (Other use, unclassified); PRP (Properties); USES (Uses)
 (vegetable-oil, Me esters; exhaust **emissions** of
 waste plant oil methylester as diesel fuel)

L7 ANSWER 26 OF 56 CAPLUS COPYRIGHT 2002 ACS
Full Text
 AN 1998:697607 CAPLUS
 DN 130:27002
 TI Development of FA-1 universal ashless **energy**-saving additive for **fuel oil**
 AU Tang, Xiaodong; Xu, Rong; Yin, Daiyi; Li, Yongjie; Yang, Xiuzhong; Ren,
 Zhenghua
 CS Dept. Chem. Eng., SWPI, Sichuan, 637001, Peop. Rep. China
 SO Xinan Shiyou Xueyuan Xuebao (1998), 20(3), 64-67
 CODEN: XSXUEG; ISSN: 1000-2634
 PB Xinan Shiyou Xueyuan Xuebao Bianjibu
 DT Journal
 LA Chinese
 CC 51-9 (Fossil Fuels, Derivatives, and Related Products)
 AB Ashless **energy**-saving additives not only can save **energy** and eliminate
 soot but also cause no secondary pollution to the atm., and therefore,
 they represent the trend of development of **energy**-saving additives for
fuel oil. FA-1 universal ashless **energy**-saving additive has been
 developed in accordance with this trend. The optimum amt. of FA-1 is
 about 0.1% (vol.), the efficiency of saving of **oil** is 4.7 on bench test
 and the av. efficiency of saving of **oil** is 15-20% (no less than 10% for
 new motor vehicles) on road test. FA-1 also has many other functions,
 such as supporting combustion, eliminating soot, reducing HC and CO2
emission, lessening carbon deposit, reducing engine noise and enhancing
 mech. horsepower, etc. After analyzing these test results, it is proposed
 that the mechanism of FA-1 lies in the improvement of the spray quality of
fuel oil and the chain reaction of three mols. occurring between
 oxygen and FA-1.
 ST **fuel oil** multifunctional additive
 IT **Fuel oil** additives

(multifunctional; FA-1 universal ashless **energy**-saving additive for **fuel oil**)

IT **Fatty acids**, uses

RL: MOA (Modifier or additive use); USES (Uses)
(tall-oil; FA-1 universal ashless **energy**-saving additive for **fuel oil**)

L7 ANSWER 27 OF 56 CAPLUS COPYRIGHT 2002 ACS

Full Text

AN 1998:514854 CAPLUS

DN 129:163813

TI Assessing the viability of using rape methyl ester (RME) as an alternative to mineral diesel **fuel** for powering road vehicles in the UK

AU Williamson, Ann-Marie; Badr, Ossama

CS Department of Applied Energy, Cranfield University, Bedfordshire, MK430AL, UK

SO Applied Energy (1998), 59(2/3), 187-214

CODEN: APENDX; ISSN: 0306-2619

PB Elsevier Science Ltd.

DT Journal; General Review

LA English

CC 52-0 (Electrochemical, Radiational, and Thermal Energy Technology)

Section cross-reference(s): 59

AB A review with 53 refs. Rape Me ester (RME) is a suitable substitute for mineral diesel in existing compression-**ignition** engines. Its use as an alternative transport **fuel** will result in decreased **emissions** of atm. pollutants (particularly SO₂, hydrocarbons and smoke) from this source. However, to encourage such a trend in the UK, the Government needs to adopt the European Union's recommendation of a redn. of excise duties on biofuels to 10% of the rate applied to lead-free petrol to ensure its economic short-term competitiveness in the UK market. Such a subsidy will not be required by the year 2004. The available resource base for rape-seed **oil** in the UK limits the prodn. of RME, so it could satisfy only up to 4% of demand on **fuel** by road vehicles powered by diesel engines in the UK. This suggests that it should be used preferentially in urban areas and waterways where its environmental benefits would be maximized.

ST rape methyl ester diesel **fuel** review

IT Diesel engines

(assessing the viability of using rape Me ester as an alternative to mineral diesel **fuel** for powering road vehicles in UK)

IT Diesel **fuel** substitutes

Diesel **fuel** substitutes

(biodiesel; assessing the viability of using rape Me ester as an alternative to mineral diesel **fuel** for powering road vehicles in UK)

IT Air pollution

(control; assessing the viability of using rape Me ester as an alternative to mineral diesel **fuel** for powering road vehicles in UK)

IT **Fatty acids**, uses

RL: PRP (Properties); TEM (Technical or engineered material use); USES (Uses)

(rape-oil, Me esters; assessing the viability of using rape Me ester as an alternative to mineral diesel **fuel** for powering road vehicles in UK)

L7 ANSWER 28 OF 56 CAPLUS COPYRIGHT 2002 ACS

Full Text

AN 1998:313092 CAPLUS

DN 128:323957

TI Combustion of **fat** and vegetable **oil** derived **fuels** in diesel engines

- AU Graboski, Michael S.; McCormick, Robert L.
 CS Colorado Institute for Fuels and High Altitude Engine Research and
 Department of Chemical Engineering and Petroleum Refining, Colorado School
 of Mines, Golden, CO, 80401-1887, USA
 SO Progress in Energy and Combustion Science (1998), 24(2), 125-164
 CODEN: PECSDO; ISSN: 0360-1285
 PB Elsevier Science Ltd.
 DT Journal; General Review
 LA English
 CC 52-0 (Electrochemical, Radiational, and Thermal Energy Technology)
 Section cross-reference(s): 45
 AB A review with 108 refs. of the status of **fat** and **oil** derived diesel
fuels with respect to **fuel** properties, engine performance, and
emissions is reviewed. The **fuels** considered are primarily the Me
 esters of **fatty acids** derived from a variety of vegetable **oils** and
 animal **fats**, and referred to as biodiesel. The major obstacle to
 widespread use of biodiesel is the high cost relative to petroleum.
 Economics of biodiesel prodn. are discussed, and it is concluded that the
 price of the feedstock **fat** or **oil** is the major factor detg. biodiesel
 price. Biodiesel is completely miscible with petroleum diesel **fuel**, and
 is generally tested as a blend. The use of biodiesel in neat or blended
 form has no effect on the **energy** based engine **fuel** economy. The
 lubricity of these **fuels** is superior to conventional diesel, and this
 property is imparted to blends at levels above 20 vol%. **Emissions** of PM
 can be reduced dramatically through use of biodiesel in engines that are
 not high lube **oil** emitters. **Emissions** of NOx increase significantly
 for both neat and blended **fuels** in both two- and four-stroke engines.
 The increase may be lower in newer, lower NOx emitting four-strokes, but
 addnl. data are needed to confirm this conclusion. A discussion of
 available data on unregulated air toxins is presented, and it is concluded
 that definitive studies have yet to be performed in this area. A detailed
 discussion of important biodiesel properties and recommendations for
 future research is presented. Among the most important recommendations is
 the need for all future studies to employ biodiesel of well-known compn.
 and purity, and to report detailed analyses. The purity levels necessary
 for achieving adequate engine endurance, compatibility with coatings and
 elastomers, cold flow properties, stability, and **emissions** performance
 must be better defined.
 ST review diesel **fuel** vegetable **oil** **fat**
 IT **Fats** and Glyceridic **oils**, uses
 RL: NUU (Other use, unclassified); USES (Uses)
 (combustion of **fat** and vegetable **oil** derived
fuels in diesel engines)
 IT Combustion
 (of **fat** and vegetable **oil** derived **fuels**
 in diesel engines)
 IT **Fats** and Glyceridic **oils**, uses
 RL: NUU (Other use, unclassified); USES (Uses)
 (vegetable; combustion of **fat** and vegetable **oil**
 derived **fuels** in diesel engines)
 L7 ANSWER 29 OF 56 CAPLUS COPYRIGHT 2002 ACS
Full Text
 AN 1998:144538 CAPLUS
 DN 128:182348
 TI Thermal preparation of liquid **fuels** for low-pollutant premixed combustion
 AU Stoffel, Beat
 CS VDI Verlag GmbH, Duesseldorf, Germany
 SO Fortschritt-Berichte VDI, Reihe 15: Umwelttechnik (1996), 151, 1-190
 CODEN: FRUMFB; ISSN: 0178-9589
 PB VDI Verlag GmbH
 DT Journal

- LA German
- CC 51-12 (Fossil Fuels, Derivatives, and Related Products)
- AB Liq. **fuels** can be **burned** with low pollutant **emissions** comparable to those attained with gaseous **fuels** if the liq. **fuels** can be converted to gaseous **fuels** and mixed homogeneously with combustion air before entering the combustion zone. Using a complete temporal and spatial sepn. of the three major steps of liq. **fuel** combustion (e.g., vaporization of finely atomized liq. **fuel**, homogeneous mixing of **fuel** and air before combustion, and combustion reaction at controlled temp. and residence time in the range of milliseconds), very low pollutant **emissions** (esp. NOx, CO, and soot) in the exhaust gas are possible. The concept was named VPL (vaporized premixed lean combustion). Exptl. investigations were carried out in a lab. scale test rig with a variable **fuel** mass flow of 0.5-2 kg/h. A multitude of liq. **fuels** were mixed with water at different ratios (water/**fuel** mass ratio 0.1-0.5:1) and converted to a gaseous **fuel** at 1-6 bar in a tube vaporizer heated externally by hot combustion exhaust gases. Depending on temp. and mean residence time in the vaporizer, different amts. of liq. **fuels** were thermally cracked (e.g., to ethylene, propene and methane). For the less volatile **fuels** (e.g., light **fuel oil**, unleaded gasoline, and rapeseed oil Me esters), coinjection of steam into the vaporizer was necessary. The generated gaseous **fuels** were mixed homogeneously with preheated combustion air in a tubular mixing zone equipped with static baffles and **burned** at atm. pressure in a new Pyrocore ceramic-fiber radiant **burner** with 15 kW thermal power installed in a water-cooled test boiler.
- ST premixed combustion liq **fuel**; pyrolysis liq **fuel** premixed combustion; steam cracking liq **fuel** premixed combustion; radiant **burner** liq **fuel** premixed combustion
- IT Synthetic fibers
RL: DEV (Device component use); USES (Uses)
(ceramic, **burners**; pyrolysis and steam cracking pre-treatment in premixed lean combustion with low pollutant **emissions**)
- IT Ceramics
RL: DEV (Device component use); USES (Uses)
(fibers, **burners**; pyrolysis and steam cracking pre-treatment in premixed lean combustion with low pollutant **emissions**)
- IT Soot
(formation and **emission** of; pyrolysis and steam cracking pre-treatment in premixed lean combustion with low pollutant **emissions**)
- IT Combustion
(premixed; pyrolysis and steam cracking pre-treatment in premixed lean combustion with low pollutant **emissions**)
- IT Thermal decomposition
(pyrolysis and steam cracking pre-treatment in premixed lean combustion with low pollutant **emissions**)
- IT **Burners**
(radiant; pyrolysis and steam cracking pre-treatment in premixed lean combustion with low pollutant **emissions**)
- IT **Fatty acids**, reactions
RL: RCT (Reactant); RACT (Reactant or reagent)
(rape-oil, Me esters, combustion of; pyrolysis and steam cracking pre-treatment in premixed lean combustion with low pollutant **emissions**)
- IT Cracking (reaction)
RL: RCT (Reactant); RACT (Reactant or reagent)
(steam; pyrolysis and steam cracking pre-treatment in premixed lean combustion with low pollutant **emissions**)
- IT 64-17-5, Ethanol, reactions 67-56-1, Methanol, reactions 142-82-5, Heptane, reactions
RL: RCT (Reactant); RACT (Reactant or reagent)
(combustion of; pyrolysis and steam cracking pre-treatment in premixed

- lean combustion with low pollutant **emissions**)
- IT 630-08-0, Carbon monoxide, formation (nonpreparative) 11104-93-1,
Nitrogen oxide (NOx), formation (nonpreparative)
RL: FMU (Formation, unclassified); POL (Pollutant); FORM (Formation,
nonpreparative); OCCU (Occurrence)
(formation and **emission** of; pyrolysis and steam cracking
pre-treatment in premixed lean combustion with low pollutant
emissions)
- IT 74-82-8, Methane, reactions 74-85-1, Ethene, reactions 115-07-1,
1-Propene, reactions
RL: FMU (Formation, unclassified); RCT (Reactant); FORM (Formation,
nonpreparative); RACT (Reactant or reagent)
(in-situ formation and combustion of; pyrolysis and steam cracking
pre-treatment in premixed lean combustion with low pollutant
emissions)
- L7 ANSWER 30 OF 56 CAPLUS COPYRIGHT 2002 ACS
Full Text
- AN 1998:135237 CAPLUS
DN 128:182437
TI Pilot production of biodiesel on the Nez Perce Tribe reservation
AU Cruz, Rico O.; Stanfill, John; Powauke, Bart
CS Nez Perce Tribe, Department of Environmental Restoration and Waste
Management, Lapwai, ID, 83540, USA
SO Bioenergy '96: Partnerships to Develop and Apply Biomass Technologies,
Proceedings of the National Bioenergy Conference, 7th, Nashville, Sept.
15-20, 1996 (1996), Volume 1, 364-371 Publisher: Tennessee Valley
Authority, Muscle Shoals, Ala.
CODEN: 65SBAY
DT Conference
LA English
CC 52-1 (Electrochemical, Radiational, and Thermal Energy Technology)
Section cross-reference(s): 17, 51, 60
AB The pilot project located at Lapwai, Idaho, relates to a renewable **fuel**
from vegetable **oil** or animal **fat** and alc. The **fuel**, termed as
biodiesel, is produced through a modified transesterification process.
Biodiesel is comparable to diesel **fuel** with respect to chem. and phys.
attributes, and combustion characteristics. Biodiesel is also,
biodegradable, cleaner **burning** and safer, and has environmentally
friendly attributes. The unit produces up to 1150 L of biodiesel per
batch, with initial batches of methanol and used cooking **oil** as raw
materials. For demonstration purposes, both biodiesel and diesel are used
in diesel powered vehicles and small engines. The raw materials and
biodiesel are analyzed, and the vehicles/engines are tested for
emissions and performance.
ST biodiesel transesterification methanol used cooking **oil**
IT Diesel **fuel** substitutes
(biodiesel; pilot prodn. of biodiesel on the Nez Perce Tribe
reservation)
IT Diesel **fuel** substitutes
RL: PRP (Properties); SPN (Synthetic preparation); PREP (Preparation)
(biodiesel; pilot prodn. of biodiesel on the Nez Perce Tribe
reservation)
IT **Fatty acids**, preparation
RL: PRP (Properties); SPN (Synthetic preparation); PREP (Preparation)
(coco, Me esters; pilot prodn. of biodiesel on the Nez Perce Tribe
reservation)
IT **Fatty acids**, preparation
RL: PRP (Properties); SPN (Synthetic preparation); PREP (Preparation)
(coco, esters, Et ester; pilot prodn. of biodiesel on the Nez Perce
Tribe reservation)
IT Wastes

- RL: RCT (Reactant); RACT (Reactant or reagent)
(cooking oil; pilot prodn. of biodiesel on the Nez Perce
Tribe reservation)
- IT Transesterification
(pilot prodn. of biodiesel on the Nez Perce Tribe reservation)
- IT Glycerides, reactions
RL: RCT (Reactant); RACT (Reactant or reagent)
(pilot prodn. of biodiesel on the Nez Perce Tribe reservation)
- IT Fatty acids, preparation
RL: PRP (Properties); SPN (Synthetic preparation); PREP (Preparation)
(rape-oil, Et esters; pilot prodn. of biodiesel on the Nez
Perce Tribe reservation)
- IT Fatty acids, preparation
RL: PRP (Properties); SPN (Synthetic preparation); PREP (Preparation)
(soya, Me esters; pilot prodn. of biodiesel on the Nez Perce Tribe
reservation)
- IT Fatty acids, preparation
RL: PRP (Properties); SPN (Synthetic preparation); PREP (Preparation)
(soya, esters, Et ester; pilot prodn. of biodiesel on the Nez Perce
Tribe reservation)
- IT Diesel fuel substitutes
(synthetic; pilot prodn. of biodiesel on the Nez Perce Tribe
reservation)
- IT 67-56-1, Methanol, reactions
RL: RCT (Reactant); RACT (Reactant or reagent)
(pilot prodn. of biodiesel on the Nez Perce Tribe reservation)
- L7 ANSWER 31 OF 56 CAPLUS COPYRIGHT 2002 ACS
- Full Text
- AN 1997:672400 CAPLUS
- DN 127:333970
- TI Rapeseed oil fuel properties for diesel engines
- AU Hamasaki, Kazunori; Kinoshita, Eiji; Nakamura, Takuya; Kameda, Akio;
Oyama, Takayuki
- CS Fac. Eng., Kagoshima Univ., Kagoshima, 890, Japan
- SO Kagoshima Daigaku Kogakubu Kenkyu Hokoku (1997), 39, 23-28
CODEN: KDKKBA; ISSN: 0451-212X
- PB Kagoshima Daigaku Kogakubu
- DT Journal
- LA Japanese
- CC 52-1 (Electrochemical, Radiational, and Thermal Energy Technology)
Section cross-reference(s): 45
- AB Due to the increasing interest in the CO2 problem, the request for
alternative fuels from regenerated vegetable energy sources is
increasing. The present work describes the results of expts. using
rapeseed oil, emulsified rapeseed oil, rapeseed Me ester, and gas
oil in a swirl-chamber diesel engine. The results show that the
viscosity of rapeseed Me ester is a little higher than that of gas oil,
and that the smoke concn. for rapeseed Me ester is about 50% lower than
that of gas oil. Furthermore, NOx and smoke concns. for emulsified
rapeseed oil are lower than those of gas oil and energy consumption
is similar to that in the case of operation with gas oil and rapeseed Me
ester.
- ST rapeseed oil emulsified diesel fuel; Me ester rapeseed diesel fuel;
exhaust diesel smoke nitrogen oxide emission; air pollution control
diesel exhaust
- IT Air pollution
(control; rapeseed oil fuel properties for diesel
engines)
- IT Fatty acids, uses
RL: NUU (Other use, unclassified); USES (Uses)
(esters, rape-oil, Me esters; rapeseed oil

- fuel properties for diesel engines)**
- IT Air pollution
(exhaust, diesel; rapeseed oil **fuel properties for diesel engines)**
- IT Diesel **fuel**
Smoke
(rapeseed oil **fuel properties for diesel engines)**
- IT Rape oil
RL: NUU (Other use, unclassified); USES (Uses)
(rapeseed oil **fuel properties for diesel engines)**
- IT 124-38-9, Carbon dioxide, occurrence 11104-93-1, Nitrogen oxide nox, occurrence
RL: POL (Pollutant); OCCU (Occurrence)
(rapeseed oil **fuel properties for diesel engines)**
- L7 ANSWER 32 OF 56 CAPLUS COPYRIGHT 2002 ACS
Full Text
- AN 1997:615690 CAPLUS
- DN 127:280645
- TI Cetane numbers of fatty compounds: influence of compound structure and of various potential cetane improvers
- AU Knothe, Gerhard; Bagby, Marvin O.; Ryan, Thomas W., III
- CS U.S. Dept. of Agriculture, USA
- SO Society of Automotive Engineers, [Special Publication] SP (1997), SP-1274(State of Alternative Fuel Technologies), 127-132
CODEN: SAESA2; ISSN: 0099-5908
- PB Society of Automotive Engineers
- DT Journal
- LA English
- CC 52-1 (Electrochemical, Radiational, and Thermal Energy Technology)
Section cross-reference(s): 59
- AB Biodiesel is a mixt. of esters (usually Me esters) of **fatty acids** found in the triglycerides of vegetable **oils**. The different fatty compds. comprising biodiesel possess different **ignition** properties. To investigate and potentially improve these properties, the cetane nos. of various **fatty acids** and esters were detd. in a const. vol. combustion app. The cetane nos. range from 20.4 for linolenic acid to 80.1 for Bu stearate. The cetane nos. depend on the no. of CH₂ groups as well as the no. of double bonds and other factors. Various oxygenated compds. were studied for their potential of improving the cetane nos. of fatty compds. Several potential cetane improvers with **ignition** delay properties giving calcd. cetane nos. over 100 were identified. The effect of these cetane improvers depended on their concn. and also on the fatty material investigated. In one case, the cetane no. of the acid was increased more than that of the corresponding esters. The effect also depends on the nature of the ester. These results offer the possibility of tailoring cetane improvers to the nature of component fatty compds. in biodiesel. The cetane improving-additives are a potential route for reducing the exhaust **emissions** of biodiesel, for example NO_x.
- ST biodiesel **fatty acid** ester cetane no; **fatty acid** ester structure cetane no
- IT **Fuels**
(biofuels, biodiesel; influence of compd. structure and of various potential cetane improvers on cetane nos. of fatty compds.)
- IT **Fatty acids**, properties
RL: PRP (Properties)
(esters; influence of compd. structure and of various potential cetane improvers on cetane nos. of fatty compds.)
- IT Air pollution
Cetane number
Ignition
(influence of compd. structure and of various potential cetane improvers on cetane nos. of fatty compds.)

- IT 11104-93-1, Nitrogen oxide, occurrence
 RL: POL (Pollutant); OCCU (Occurrence)
 (influence of compd. structure and of various potential cetane
 improvers on cetane nos. of fatty compds.)
- IT 57-11-4, Stearic acid, properties 60-33-3, Linoleic acid, properties
 111-59-1, Propyl oleate 111-61-5, Ethyl stearate 111-62-6, Ethyl
 oleate 112-61-8, Methyl stearate 112-62-9, Methyl oleate 112-63-0,
 Methyl linoleate 112-80-1, Oleic acid, properties 123-95-5, Butyl
 stearate 142-77-8, Butyl oleate 301-00-8, Methyl linolenate
 463-40-1, Linolenic acid 544-35-4, Ethyl linoleate 1191-41-9, Ethyl
 linolenate 2634-45-9, Butyl linoleate 3634-92-2, Propyl stearate
 38370-68-2, Butyl linolenate 38433-95-3, Propyl linoleate 106196-77-4
 RL: PRP (Properties)
 (influence of compd. structure and of various potential cetane
 improvers on cetane nos. of fatty compds.)
- L7 ANSWER 33 OF 56 CAPLUS COPYRIGHT 2002 ACS
Full Text
- AN 1997:558532 CAPLUS
 DN 127:139458
 TI Sources of Fine Organic Aerosol. 8. Boilers **Burning** No. 2 Distillate
Fuel Oil
 AU Rogge, Wolfgang F.; Hildemann, Lynn M.; Mazurek, Monica A.; Cass, Glen R.;
 Simoneit, Bernd R. T.
 CS Environmental Engineering Science Department, California Institute of
 Technology, Pasadena, CA, 91125, USA
 SO Environmental Science and Technology (1997), 31(10), 2731-2737
 CODEN: ESTHAG; ISSN: 0013-936X
 PB American Chemical Society
 DT Journal
 LA English
 CC 59-2 (Air Pollution and Industrial Hygiene)
 Section cross-reference(s): 51
- AB Fine org. particulate matter emitted from an industrial-scale boiler
burning no. 2 distillate **fuel oil** has been characterized on a mol.
 basis using GC/MS techniques. Most of the identified compd. mass consists
 of n-alkanoic acids (42.0-51.5%), arom. acids (5.8-22.6%), and n-alkanes
 (6.7-25.0%). Polycyclic arom. hydrocarbons (PAH) and oxygenated PAH
 (oxy-PAH) together comprise 3.1-8.6% of the identifiable mass and together
 with chlorinated compds. (5.8-16.4%) show the largest variations in
emission rates between the two expts. reported here. An increase in
 chlorinated compd. **emissions** between tests is accompanied by a similar
 increase in elemental carbon (i.e., soot) and PAH **emissions**, which may
 follow the results of lab. expts. that suggest that the presence of
 chlorinated compds. can enhance both soot and PAH formation. Differences
 between the hopanes distribution in the boiler exhaust vs. that found in
 both vehicle exhaust and in the southern California atm. suggest that the
oil-fired boiler exhaust is at most a minor contributor to the atm.
 aerosol, which is consistent with inferences drawn from local **emission**
 inventories.
- ST org particulate flue gas air pollution; **fuel oil** org particulate
emission; alkanoate arom acid alkane particulate **emission**; polycyclic
 arom hydrocarbon **emission**; boiler distillate **fuel oil** soot **emission**
- IT Polycyclic compounds
 RL: POL (Pollutant); OCCU (Occurrence)
 (arom. hydrocarbons; compn. of org. particulate matter emitted from an
 industrial-scale boiler **burning** no. 2 distillate **fuel**
oil)
- IT Carboxylic acids, occurrence
 RL: POL (Pollutant); OCCU (Occurrence)
 (arom.; compn. of org. particulate matter emitted from an
 industrial-scale boiler **burning** no. 2 distillate **fuel**

- oil)
- IT Atmospheric aerosols
Flue gases
Fuel oil
Soot
(compn. of org. particulate matter emitted from an industrial-scale boiler **burning** no. 2 distillate fuel oil)
- IT Alkanes, occurrence
Fatty acids, occurrence
RL: POL (Pollutant); OCCU (Occurrence)
(compn. of org. particulate matter emitted from an industrial-scale boiler **burning** no. 2 distillate fuel oil)
- IT Triterpenes
RL: POL (Pollutant); OCCU (Occurrence)
(hopane; compn. of org. particulate matter emitted from an industrial-scale boiler **burning** no. 2 distillate fuel oil)
- IT Air pollution
(particulate; compn. of org. particulate matter emitted from an industrial-scale boiler **burning** no. 2 distillate fuel oil)
- IT Aromatic hydrocarbons, occurrence
RL: POL (Pollutant); OCCU (Occurrence)
(polycyclic; compn. of org. particulate matter emitted from an industrial-scale boiler **burning** no. 2 distillate fuel oil)
- IT 50-32-8, Benzo[a]pyrene, occurrence 50-79-3, 2,5-Dichlorobenzoic acid
56-55-3, Benz[a]anthracene 57-10-3, Hexadecanoic acid, occurrence
57-11-4, Octadecanoic acid, occurrence 65-85-0, Benzoic acid, occurrence
82-05-3, 7H-Benz[de]anthracen-7-one 84-65-1, Anthraquinone 85-01-8, Phenanthrene, occurrence 87-65-0, 2,6-Dichlorophenol 100-21-0, 1,4-Benzenedicarboxylic acid, occurrence 106-48-9, 4-Chlorophenol
112-37-8, Undecanoic acid 112-85-6, Behenic acid 112-95-8, Eicosane
120-12-7, Anthracene, occurrence 121-91-5, 1,3-Benzenedicarboxylic acid, occurrence 129-00-0, Pyrene, occurrence 143-07-7, Dodecanoic acid, occurrence 192-97-2, Benzo[e]pyrene 203-12-3, Benzo[ghi]fluoranthene
205-99-2, Benzo[b]fluoranthene 206-44-0, Fluoranthene 207-08-9, Benzo[k]fluoranthene 334-48-5, Decanoic acid 486-25-9, 9H-Fluoren-9-one 506-12-7, Heptadecanoic acid 506-30-9, Eicosanoic acid 506-38-7, Pentacosanoic acid 506-46-7, Hexacosanoic acid
535-80-8, 3-Chlorobenzoic acid 544-63-8, Tetradecanoic acid, occurrence 544-85-4, Dotriacontane 557-59-5, Tetracosanoic acid 593-49-7, Heptacosane 629-92-5, Nonadecane 629-94-7, Heneicosane 629-97-0, Docosane 629-99-2, Pentacosane 630-01-3, Hexacosane 630-02-4, Octacosane 630-03-5, Nonacosane 630-04-6, Hentriacontane 630-05-7, Tritriacontane 638-53-9, Tridecanoic acid 638-67-5, Tricosane 638-68-6, Triacontane 646-30-0, Nonadecanoic acid 646-31-1, Tetracosane 2433-96-7, Tricosanoic acid 2840-51-9, 2-Methylfluoren-9-one 86853-88-5, 1H-Benz[de]anthracen-1-one
RL: POL (Pollutant); OCCU (Occurrence)
(compn. of org. particulate matter emitted from an industrial-scale boiler **burning** no. 2 distillate fuel oil)

L7 ANSWER 34 OF 56 CAPLUS COPYRIGHT 2002 ACS

Full Text

AN 1997:445913 CAPLUS

DN 127:111128

TI Results of the joint project "fuel from rape"

AU Hacker, Claus-M.; Schliephake, Dietrich

CS FIB - Forschungs-, Industrie- und Umweltberatungsgesellschaft mbH,
Velbert, D-42552, Germany

SO European Motor Biofuels Forum, Proceedings, 2nd, Graz, Sept. 22-25, 1996

- (1996), 353-360 Publisher: Joanneum Research Forschungsgesellschaft, Graz, Austria.
CODEN: 64RCAP
- DT Conference
LA English
CC 52-1 (Electrochemical, Radiational, and Thermal Energy Technology)
Section cross-reference(s): 45
- AB The report includes selected results of the joint project "**Fuel** from Rape" which investigates into the agricultural, process and chem. engineering framework for the utilization of rape seed oil and its conversion products as **fuel**. The entire process chain from the cultivation to the oil mill and the chem. conversion into **fuel** and also practical testing was assessed in 15 individual projects. We were able to prove that through the use of rape seed oil in refineries we can produce a **fuel** (DKR) with excellent exhaust **emission** values. Keypoints of the project work were the assessment of **energy** and CO2 balance and a comparison of the bio-fuels DKR, RME and ROR.
- ST diesel **fuel** rapeseed oil methyl ester
IT Air pollution
(control; diesel **fuel** from rapeseed oil)
IT Diesel **fuel**
(diesel **fuel** from rapeseed oil)
IT **Fatty acids**, uses
RL: BMF (Bioindustrial manufacture); NUU (Other use, unclassified); BIOL (Biological study); PREP (Preparation); USES (Uses)
(esters, rape-oil, Me esters; diesel **fuel** from rapeseed oil)
- L7 ANSWER 35 OF 56 CAPLUS COPYRIGHT 2002 ACS
Full Text
AN 1997:434816 CAPLUS
DN 127:69961
TI Survey about biodiesel exhaust **emissions** and their environmental effects
AU Krah1, Jurgen; Munack, Axel; Bahadi, Mufit; Schumacher, Leon; Elser, Nancy
CS Inst. Biosystems Engineering, Federal Agricultural Res. Centre, Braunschweig, Germany
SO Liquid Fuel and Industrial Products from Renewable Resources, Proceedings of the Liquid Fuel Conference, 3rd, Nashville, Sept. 15 -17, 1996 (1996), 136-148. Editor(s): Cundiff, John S. Publisher: American Society of Agricultural Engineers, St. Joseph, Mich.
CODEN: 64QYAI
- DT Conference
LA English
CC 59-3 (Air Pollution and Industrial Hygiene)
AB In Europe, the use of rapeseed **fuels** in diesel engines has been intensively investigated since the **energy** crisis of the early 1970s. In the beginning, the emphasis was placed on the tech. possibilities assocd. with the use of rapeseed oil as a **fuel**. However, research has shown that pure rapeseed oil can only be used in specially designed engines. Research that followed indicated that rapeseed oil Me ester (RME) was a suitable replacement for petroleum diesel **fuel** (DF). After this discovery, research has focused on the engine exhaust **emissions** that result when fueling with both unmodified rapeseed oil and RME. In the USA research has focused on soybean oil methylester (SME). Both RME and SME are called biodiesel. In Germany biodiesel must fulfill the std. DIN V 51606. Initially, environmental related research concd. on the federally regulated hydrocarbons (HC), carbon monoxide (CO), and oxides of nitrogen (NOx) exhaust gas **emissions** (Vellguth, 1987). In addn., a series of current publications compare the environmentally important but non-regulated polycyclic arom. hydrocarbons (PAH), aldehydes, ketones and in some cases, the arom. compds. The paper presented is based on a former publication of Krah1 et al. (1994), that spanned the data collected to

- Mar., 1994. This paper includes addnl. data taken after Mar. of 1994.
- ST biodiesel exhaust **emission**
- IT Soybean oil
 RL: NUU (Other use, unclassified); USES (Uses)
 (Me ester; survey of biodiesel exhaust **emissions** and their environmental effects)
- IT Exhaust gases (engine)
 (diesel; survey of biodiesel exhaust **emissions** and their environmental effects)
- IT **Fatty acids**, uses
 RL: NUU (Other use, unclassified); USES (Uses)
 (esters, rape-oil, Me esters; survey of biodiesel exhaust **emissions** and their environmental effects)
- IT Air pollution
 Soot
 (survey of biodiesel exhaust **emissions** and their environmental effects)
- IT Aldehydes, formation (nonpreparative)
 Aromatic compounds
 Hydrocarbons, formation (nonpreparative)
 RL: FMU (Formation, unclassified); POL (Pollutant); FORM (Formation, nonpreparative); OCCU (Occurrence)
 (survey of biodiesel exhaust **emissions** and their environmental effects)
- IT 71-43-2, Benzene, formation (nonpreparative) 630-08-0, Carbon monoxide, formation (nonpreparative) 11104-93-1, Nitrogen oxide, formation (nonpreparative)
 RL: FMU (Formation, unclassified); POL (Pollutant); FORM (Formation, nonpreparative); OCCU (Occurrence)
 (survey of biodiesel exhaust **emissions** and their environmental effects)
- L7 ANSWER 36 OF 56 CAPLUS COPYRIGHT 2002 ACS
- Full Text
- AN 1997:317055 CAPLUS
- DN 127:37003
- TI Life cycle analysis of biofuels under different environmental aspects
- AU Kaltschmitt, M.; Reinhardt, G. A.; Stelzer, T.
- CS Institut für Energiewirtschaft und Rationelle Energieanwendung (IER), Universität Stuttgart, Stuttgart, D-70565, Germany
- SO Biomass and Bioenergy (1997), 12(2), 121-134
 CODEN: BMSBEO; ISSN: 0961-9534
- PB Elsevier
- DT Journal
- LA English
- CC 52-1 (Electrochemical, Radiational, and Thermal Energy Technology)
 Section cross-reference(s): 59
- AB The environmental impact of bioenergy carriers can be detd. with the help of life cycle anal. The present study shows that bioenergy carriers offer some clear ecol. advantages over fossil **fuels**, such as conserving fossil **energy** resources or reducing the greenhouse effect, but they also have some definite disadvantages (in particular regarding certain airborne pollutants) when the overall life cycle is considered. The paper first discusses the methodol. approach for conducting a Life Cycle Anal. (LCA) for biofuels; this approach is then used for a case study of Rape Me Ester (RME) compared with diesel **fuel**. The same approach is then applied for some bioenergy routes discussed currently in Germany. For the different bioenergy routes the results of the LCA for **Energy**, CO2 equivalents, N2O **emissions**, SO2 equivalents, SO2 **emissions** and NOx **emissions** are given and discussed.
- ST biofuel life cycle analysis environmental aspect
- IT Hydrocarbons, formation (nonpreparative)

- RL: FMU (Formation, unclassified); POL (Pollutant); FORM (Formation, nonpreparative); OCCU (Occurrence)
 (C>1; life cycle anal. of biofuels under different environmental aspects)
- IT Wood
 (beech, wastes, **energy** carrier; life cycle anal. of biofuels under different environmental aspects)
- IT **Fuels**
 (biofuels; life cycle anal. of biofuels under different environmental aspects)
- IT Barley
 Grass (Poaceae)
 Miscanthus
 Orchard grass
 Poplar (Populus)
 Reed
 Triticale
 Wheat straw
 Willow (Salix)
 Winter wheat
 Wood waste
 (**energy** carrier; life cycle anal. of biofuels under different environmental aspects)
- IT Rape oil
 Rye
 RL: TEM (Technical or engineered material use); USES (Uses)
 (**energy** carrier; life cycle anal. of biofuels under different environmental aspects)
- IT **Fatty acids, uses**
 RL: TEM (Technical or engineered material use); USES (Uses)
 (esters, rape-oil, Me esters; life cycle anal. of biofuels under different environmental aspects)
- IT Potato (Solanum tuberosum)
 Wheat
 (ethanol, **energy** carrier; life cycle anal. of biofuels under different environmental aspects)
- IT Dust
 Environmental pollution
 Particles
 (life cycle anal. of biofuels under different environmental aspects)
- IT Wood
 (spruce, wastes, **energy** carrier; life cycle anal. of biofuels under different environmental aspects)
- IT 64-17-5, Ethanol, uses
 RL: TEM (Technical or engineered material use); USES (Uses)
 (**energy** carrier; life cycle anal. of biofuels under different environmental aspects)
- IT 64-17-5, Ethanol, uses
 RL: TEM (Technical or engineered material use); USES (Uses)
 (**fuel**; life cycle anal. of biofuels under different environmental aspects)
- IT 50-00-0, Formaldehyde, formation (nonpreparative) 50-32-8, Benzo[a]pyrene, formation (nonpreparative) 71-43-2, Benzene, formation (nonpreparative) 74-82-8, Methane, formation (nonpreparative) 124-38-9, Carbon dioxide, formation (nonpreparative) 630-08-0, Carbon monoxide, formation (nonpreparative) 7446-09-5, Sulfur dioxide, formation (nonpreparative) 7647-01-0, Hydrogen chloride, formation (nonpreparative) 7664-41-7, Ammonia, formation (nonpreparative) 10024-97-2, Nitrous oxide, formation (nonpreparative) 11104-93-1, Nitrogen oxide, formation (nonpreparative) 41903-57-5, Tetrachlorodibenzodioxin
 RL: FMU (Formation, unclassified); POL (Pollutant); FORM (Formation,

nonpreparative); OCCU (Occurrence)
 (life cycle anal. of biofuels under different environmental aspects)

L7 ANSWER 37 OF 56 CAPLUS COPYRIGHT 2002 ACS

Full Text

AN 1997:263988 CAPLUS

DN 126:280153

TI Producing biodiesel for the "truck in the park" project

AU Peterson, C.; Reece, Daryl; Thompson, Joe; Beck, Sidney; Haines, H.; Chase, C.

CS Department of Agricultural Engineering, University of Idaho, Moscow, ID, 83844-2040, USA

SO Proceedings - Biomass Conference of the Americas: Energy, Environment, Agriculture and Industry, 2nd, Portland, Oreg., Aug. 21-24, 1995 (1995), 921-930 Publisher: National Renewable Energy Laboratory, Golden, Colo. CODEN: 64FMAT

DT Conference

LA English

CC 52-1 (Electrochemical, Radiational, and Thermal Energy Technology)
 Section cross-reference(s): 45, 59

AB One of the principal advantages of biodiesel is it's environmental compatibility. It's biodegradability and reduced toxicity make it an ideal candidate **fuel** for environmentally sensitive areas. Biodiesel has potential as a **fuel** for equipment operating in or near waterways, sensitive wildlife habitat and other environmentally sensitive areas. The national park system has a mandate to maintain the environment in the areas they supervise. Use of biodiesel could be one more tool in achieving that goal. This paper is a progress report of a joint project between the University of Idaho, The Montana Department of Natural Resources and Conservation, Wyoming Department of **Energy**, the PNW and Alaska Regional Bioenergy Program, Chrysler Corporation and the National Park Service to **fuel** an on-road vehicle for service in Yellowstone National Park. A 5.9-L Cummins powered Dodge pickup is operated by NPS with **fuel** produced by the University of Idaho. Tests include regular dynamometer testing, **emissions** tests, injector coking anal., **oil** anal., detailed operational records and **fuel** characterization tests according to the ASAE proposed Engineering Practice for Testing of **Fuels** from Biol. Materials, X552.

ST dynamometer testing **emission** truck biofuel; rape **oil** ethyl ester diesel **fuel**

IT Diesel engines

Exhaust particles (engine)

(**emission** and performance of truck operation on rape **oil** Et ester diesel **fuel**)

IT Hydrocarbons, occurrence

RL: POL (Pollutant); OCCU (Occurrence)

(**emission** and performance of truck operation on rape **oil** Et ester diesel **fuel**)

IT Air pollution

(exhaust; **emission** and performance of truck operation on rape **oil** Et ester diesel **fuel**)

IT **Fatty acids**, uses

RL: TEM (Technical or engineered material use); USES (Uses)

(rape-**oil**, Et esters; **emission** and performance of truck operation on rape **oil** Et ester diesel **fuel**)

IT 630-08-0, Carbon monoxide, occurrence 11104-93-1, Nitrogen oxide nox, occurrence

RL: POL (Pollutant); OCCU (Occurrence)

(**emission** and performance of truck operation on rape **oil** Et ester diesel **fuel**)

L7 ANSWER 38 OF 56 CAPLUS COPYRIGHT 2002 ACS

Full Text

AN 1997:29421 CAPLUS
 DN 126:91773
 TI Introduction of rapeseed methyl ester in diesel fuel - the French National Program
 AU Montagne, X.
 CS Institut Francais du Petrole, Fr.
 SO Society of Automotive Engineers, [Special Publication] SP (1996), SP-1208(Topics in Alternative Fuels and Their Emissions), 239-248
 CODEN: SAESA2; ISSN: 0099-5908
 PB Society of Automotive Engineers
 DT Journal
 LA English
 CC 51-9 (Fossil Fuels, Derivatives, and Related Products)
 AB The use of bio-fuels in Europe is justified by the common agricultural policy decisions, by the need to improve environment protection and by the search of alternative fossil **energy** sources. In such a context, France decided to conduct a national expt. to demonstrate that a diesel fuel contg., up to 5%, rapeseed Me ester (RME) could be handled as common diesel fuel by the distributors. Refiners (Elf, TOTAL), car and truck manufacturers (PSA, RENAULT SA, RENAULT TRUCKS), French civil services (industry and agricultural departments, ADEME) and an organization working on vegetable oils (ONIDOL) joined this program implemented and coordinated by IFP. Comprehensive tests were used to assess the impact of RME introduction on the main phys. and chem. characteristics of the blends produced, their compatibility with fuel additives and with plastic or metallic parts of engines and fuel lines. Running tests were used with private car and truck fleets, tests with car and truck engines on bench and chassis dynamometer to assess the behavior on aging, fouling and **emissions**. This paper presents a synthesis of the results obtained during this program which lasted from 1990 to 1995. Whereas its overall balance is pos. for the use of RME5 blends regarding aging, material compatibility, regulated (CO, UHC, particulates) or unregulated (aldehydes, PAH) pollutant **emissions**, it also points out some elements which have to be examd. as, for instance, a slight increase in NOx **emissions** or a slight deposit occurrence. Some improvement opportunities are proposed when needed and prospective development of the vegetable Me ester channel, used as diesel fuel in France or in Europe, is drawn up.
 ST rapeseed methyl ester diesel fuel
 IT **Fatty acids**, uses
 RL: MOA (Modifier or additive use); USES (Uses)
 (esters, rape-oil, Me esters; introduction of rapeseed Me ester in diesel fuel - the French National Program)
 IT Diesel fuel
 RL: PEP (Physical, engineering or chemical process); RCT (Reactant); PROC (Process); RACT (Reactant or reagent)
 (introduction of rapeseed Me ester in diesel fuel - the French National Program)

L7 ANSWER 39 OF 56 CAPLUS COPYRIGHT 2002 ACS

Full Text

AN 1996:514904 CAPLUS
 DN 125:200646
 TI Rape seed oil methyl ester fuel as alternative diesel fuel for high speed diesel engines for urban buses
 AU Jankowski, A.; Seczyk, J.; Reksa, M.; Sitnik, L.
 CS Inst. of Aeronautics, Warsaw, Pol.
 SO ICE (American Society of Mechanical Engineers) (1995), 24(Natural Gas and Alternative Fuels for Engines 1995), 105-109
 CODEN: ICEIEG; ISSN: 1066-5048
 PB American Society of Mechanical Engineers

DT Journal
 LA English
 CC 52-1 (Electrochemical, Radiational, and Thermal Energy Technology)
 Section cross-reference(s): 48, 59
 AB The research concerning the application of rape oil-derived fuels in diesel engines of city buses is presented. The results of testing a RABA MAN Diesel engine of catalog rated power 141 kW at speed 2100 rpm, stroke vol. 10.349 dm³, and direct injection into an HM-type chamber on a test bed are given using a Me ester of rapeseed oil (RME) fuel. The testing comprised the engine performance and exhaust emissions measurement in compliance with EEC 49. The obtained results were compared with those for diesel fuel. Road testing of buses fed with RME fuel was conducted. As shown by the engine performance characteristics, the energy efficiency of the engine was slightly higher when the rape seed oil-derived fuel was used. Approx. 15% redn. in NO_x, ~12% redn. in hydrocarbons, and ~40% redn. in soot were obtained using the RME fuel.
 ST rapeseed oil methyl ester diesel fuel; engine diesel rapeseed oil fuel
 IT Engines
 (diesel, rapeseed oil Me ester as alternative fuel for high-speed diesel engines for urban buses)
 IT Fatty acids, uses
 RL: TEM (Technical or engineered material use); USES (Uses)
 (rape-oil, Me esters, rapeseed oil Me ester as alternative fuel for high-speed diesel engines for urban buses)
 IT Fuels, diesel
 (substitutes, rapeseed oil Me ester as alternative fuel for high-speed diesel engines for urban buses)

L7 ANSWER 40 OF 56 CAPLUS COPYRIGHT 2002 ACS
Full Text
 AN 1996:514895 CAPLUS
 DN 125:172181
 TI Thermodynamic analysis of the engine internal process to determine the suitability of vegetable oils as alternative fuels for diesel engines
 AU Raubold, W.
 CS Internal Combustion Engines Dept., Technical Univ. Berlin, Berlin, Germany
 SO ICE (American Society of Mechanical Engineers) (1995), 24(Natural Gas and Alternative Fuels for Engines 1995), 9-15
 CODEN: ICEIEG; ISSN: 1066-5048
 PB American Society of Mechanical Engineers
 DT Journal
 LA English
 CC 48-8 (Unit Operations and Processes)
 Section cross-reference(s): 52
 AB Test-bed results were presented for a swirl-chamber diesel engine using four different kinds of fuel: (1) diesel fuel (ref.), (2) unprocessed rapeseed oil, (3) short-chain (C₈,10) fatty acids, and (4) an oil similar to rapeseed oil. The thermodyn. anal. of the measured cylinder pressure curves were used to obtain more detailed information, in addn. to the std. performance characteristics and emissions. The resultant heat-release curves helped to show correlations between the properties of the fuels used and the test-bed results. In addn. to the gaseous emissions, the smoke nos. and the particulate emissions according to EPA regulations were also measured. The test engine did not meet the performance and durability requirements when fueled with rapeseed oil. When vegetable oils with long-chain fatty acids are to be burned, the injection system should be modified to alter the injection timing according to engine speed and load. Moderate loads and temps. in the swirl chamber obstruct the vaporization and the onset of combustion of long-chain fuels. In non-adapted swirl-chamber diesel engines, it is

- most likely that vegetable oils with short-chain fatty acids can be burned without major problems. It is likely that the position of the injection nozzle can be redesigned so that less coke is formed.
- ST diesel engine rapeseed oil combustion; **fatty acid** combustion diesel engine
- IT Combustion
(of vegetable oils; thermodyn. anal. of combustion of vegetable oils as alternative fuel for swirl-chamber diesel engines)
- IT Fuels, diesel
(substitute; thermodyn. anal. of combustion of vegetable oils as alternative fuel for swirl-chamber diesel engines)
- IT Rape oil
RL: NUU (Other use, unclassified); RCT (Reactant); RACT (Reactant or reagent); USES (Uses)
(thermodyn. anal. of combustion of vegetable oils as alternative fuel for swirl-chamber diesel engines)
- IT Fatty acids, reactions
RL: NUU (Other use, unclassified); RCT (Reactant); RACT (Reactant or reagent); USES (Uses)
(C8-10, substitute diesel fuel; thermodyn. anal. of combustion of vegetable oils as alternative fuel for swirl-chamber diesel engines)
- IT Engines
(diesel, vegetable oil-fueled; thermodyn. anal. of combustion of vegetable oils as alternative fuel for swirl-chamber diesel engines)
- IT Engines
(diesel, rape oil-fueled, thermodyn. anal. of combustion of vegetable oils as alternative fuel for swirl-chamber diesel engines)

L7 ANSWER 41 OF 56 CAPLUS COPYRIGHT 2002 ACS

Full Text

- AN 1996:245103 CAPLUS
- DN 124:293889
- TI Reduction of pollutants by premixed combustion of **fuel** gases derived from liquid **fuels**
- AU Stoffel, B.; Reh, L.
- CS Zurich, Switz.
- SO VDI-Berichte (1995), 1193 (Verbrennung und Feuerungen: 17. Deutscher Flammentag, 1995), 549-56
CODEN: VDIBAP; ISSN: 0083-5560
- PB VDI-Verlag
- DT Journal
- LA German
- CC 51-12 (Fossil Fuels, Derivatives, and Related Products)
Section cross-reference(s): 59
- AB The combustion of N-free and N-contg. liq. **fuels** (i.e., MeOH, EtOH, n-heptane, unleaded gasoline, propane, light distillate **fuel oil**, and rape-oil Me ester) was examd. in a premix ceramic-fiber **burner** (15-kW thermal capacity). Combustion was characterized by the following steps: (1) rapid evapn. of atomized liq. **fuel** in the presence of a small amt. of water vapor in an externally heated evaporator, (2) mixing of the **fuel** gases with preheated combustion air, and (3) combustion at the ceramic fiber surface of the **burner**. For the N-free **fuels** (all the above **fuels** except for the **fuel oil**), extremely low NOx (10-50 mg/m³ at air-fuel ratio, λ , 1.2; 5-20 mg/m³ at λ ~2) and CO **emissions** were attained. Under these conditions, combustion of the N-contg. **fuel oil** resulted in significantly higher NOx **emissions**, due to the nearly complete conversion of **fuel**-N to NOx.
- ST premixed combustion ceramic fiber **burner**; nitrogen oxide premixed combustion; **fuel oil** premixed combustion nitrogen oxide

- IT **Burners**
(ceramic fiber; redn. of NOx and CO **emissions** by premix combustion of liq. **fuels** in ceramic-fiber burner)
- IT **Fuel oil**
(light distillate, combustion of; redn. of NOx and CO **emissions** by premix combustion of liq. **fuels** in ceramic-fiber burner)
- IT Combustion
(premix; redn. of NOx and CO **emissions** by premix combustion of liq. **fuels** in ceramic-fiber burner)
- IT Synthetic fibers
RL: DEV (Device component use); USES (Uses)
(ceramic, in **burners**; redn. of NOx and CO **emissions** by premix combustion of liq. **fuels** in ceramic-fiber burner)
- IT Ceramic materials and wares
RL: DEV (Device component use); USES (Uses)
(fibers, in **burners**; redn. of NOx and CO **emissions** by premix combustion of liq. **fuels** in ceramic-fiber burner)
- IT Gasoline
RL: PEP (Physical, engineering or chemical process); RCT (Reactant); PROC (Process); RACT (Reactant or reagent)
(lead-free, combustion of; redn. of NOx and CO **emissions** by premix combustion of liq. **fuels** in ceramic-fiber burner)
- IT **Fatty acids**, reactions
RL: PEP (Physical, engineering or chemical process); RCT (Reactant); PROC (Process); RACT (Reactant or reagent)
(rape-oil, Me esters, combustion of; redn. of NOx and CO **emissions** by premix combustion of liq. **fuels** in ceramic-fiber burner)
- IT 630-08-0, Carbon monoxide, formation (nonpreparative) 11104-93-1, Nitrogen oxide (NOx), formation (nonpreparative)
RL: FMU (Formation, unclassified); POL (Pollutant); FORM (Formation, nonpreparative); OCCU (Occurrence)
(formation of; redn. of NOx and CO **emissions** by premix combustion of liq. **fuels** in ceramic-fiber burner)
- IT 64-17-5, Ethanol, reactions 67-56-1, Methanol, reactions 74-98-6, Propane, reactions 142-82-5, Heptane, reactions
RL: PEP (Physical, engineering or chemical process); RCT (Reactant); PROC (Process); RACT (Reactant or reagent)
(model **fuel**, combustion of; redn. of NOx and CO **emissions** by premix combustion of liq. **fuels** in ceramic-fiber burner)
- L7 ANSWER 42 OF 56 CAPLUS COPYRIGHT 2002 ACS
AN 1996:175004 CAPLUS
DN 124:237078
TI Transient testing of soy methyl ester **fuels** in an indirect injection, compression **ignition** engine
AU Purcell, D. L.; McClure, B. T.; McDonald, J.; Basu, Hemendra N.
CS U.S. Bureau Mines, Twin Cities Research Center, Minneapolis, MN, 55417, USA
SO Journal of the American Oil Chemists' Society (1996), 73(3), 381-7
CODEN: JAOCA7; ISS
- N: 0003-021X
PB AOCS Press
DT Journal
LA English
CC 52-1 (Electrochemical, Radiational, and Thermal Energy Technology)
Section cross-reference(s): 59
AB An evaluation of the exhaust **emissions** from a compression **ignition**

engine for **fuels** composed of 100 and 30% Me esters of soy oil (SME) is described. These **fuels** were compared with a low-sulfur, petroleum #2 diesel **fuel** in a Caterpillar 3304, prechamber, 75 kW diesel engine, operated over heavy- and light-duty transient test cycles developed by the United States Bureau of Mines. More than 60 h of testing was performed on each **fuel**. The objective was to det. the influence of the **fuels** upon diesel particulate matter (DPM) and gaseous **emissions**. The effect of a modern diesel oxidn. catalyst (DOC) also was detd. in an effort to minimize **emissions**. Neat SME produced a higher volatile fraction of the DPM, but much less carbon soot fraction, leading to overall DPM redns. of 23 to 30% for the light- and heavy-duty transients. The DOC further reduced the volatile fraction and the total DPM. The SME **fuel** reduced gaseous **emissions** of CO by 23% and hydrocarbons by over 30% without increasing NOx. The DOC further reduced CO and hydrocarbon levels. Mutagenicity of the SME exhaust was low. Results indicate that SME **fuel**, used with a proper DOC, may be a feasible **emission** redn. technol. for underground mines.

- ST soy methyl ester **fuel** ignition engine
- IT Hydrocarbons, formation (nonpreparative)
 RL: FMU (Formation, unclassified); POL (Pollutant); FORM (Formation, nonpreparative); OCCU (Occurrence)
 (**emission**; transient testing of soy Me ester **fuels** in an indirect injection compression **ignition** engine)
- IT Rare earth metals, uses
 RL: CAT (Catalyst use); USES (Uses)
 (oxidn. catalyst, with platinum; transient testing of soy Me ester **fuels** in an indirect injection compression **ignition** engine)
- IT **Ignition**
 Oxidation catalysts
 (transient testing of soy Me ester **fuels** in an indirect injection compression **ignition** engine)
- IT Engines
 (diesel, indirect injection compression **ignition**; transient testing of soy Me ester **fuels** in)
- IT Exhaust gases
 (diesel, transient testing of soy Me ester **fuels** in an indirect injection compression **ignition** engine)
- IT **Fatty acids**, uses
 RL: TEM (Technical or engineered material use); USES (Uses)
 (soya, Me esters; transient testing of soy Me ester **fuels** in an indirect injection compression **ignition** engine)
- IT **Fuels**, diesel
 (substitutes, transient testing of soy Me ester **fuels** in an indirect injection compression **ignition** engine)
- IT 50-00-0, Formaldehyde, formation (nonpreparative) 630-08-0, Carbon monoxide, formation (nonpreparative) 10102-43-9, Nitric oxide, formation (nonpreparative) 10102-44-0, Nitrogen dioxide, formation (nonpreparative) 11104-93-1, Nitrogen oxide, formation (nonpreparative)
 RL: FMU (Formation, unclassified); POL (Pollutant); FORM (Formation, nonpreparative); OCCU (Occurrence)
 (**emission**; transient testing of soy Me ester **fuels** in an indirect injection compression **ignition** engine)
- IT 7440-06-4, Platinum, uses
 RL: CAT (Catalyst use); USES (Uses)
 (oxidn. catalyst, with rare earth; transient testing of soy Me ester **fuels** in an indirect injection compression **ignition** engine)

L7 ANSWER 43 OF 56 CAPLUS COPYRIGHT 2002 ACS

Full Text

AN 1996:122111 CAPLUS

- DN 124:180971
 TI Combustion of soybean oil methyl ester in a direct injection diesel engine
 AU Scholl, Kyle W.; Sorenson, Spencer C.
 CS Caterpillar Inc., USA
 SO Alternate Fuels: A Decade of Success and Promise (1994), 555-67.
 Editor(s): Bata, Reda Mohamed. Publisher: Society of Automotive Engineers, Warrendale, Pa.
 CODEN: 62KQAI
 DT Conference
 LA English
 CC 52-1 (Electrochemical, Radiational, and Thermal Energy Technology)
 Section cross-reference(s): 59
 AB The purpose of this study is to investigate the combustion of soybean oil Me ester in a direct injection diesel engine, and compare it to that of a conventional diesel fuel. Exptl. measurements of performance, **emissions**, and rate of heat release were performed as a function of engine load for different fuel injection timings, and injector orifice diams. It was found that overall, the soybean oil Me ester behaved comparably to diesel fuel in terms of performance and rate of heat release. The Me ester fuel gave lower HC **emissions** and smoke no. than diesel fuel at optimum operating conditions. The results for CO **emissions** were varied. NOx **emissions** were strongly related to the cylinder pressure development. Changing the injection orifice diam. had less effect on engine performance when using diesel fuel, than with Me ester fuel. A smaller orifice diam. gave higher cylinder pressure and max. rate of pressure increase, higher NOx **emissions**, and a larger amt. of premixed **burning** for both fuels. The variation of injection timing had a pronounced effect on performance and **emissions** for both fuels. Conventional trends in **emissions**, performance and rate of heat release were obsd. for both fuels.
 ST combustion soybean oil methyl ester engine; diesel engine soybean oil methyl ester
 IT Combustion
 (combustion of soybean oil Me ester in a direct injection diesel engine)
 IT Hydrocarbons, formation (nonpreparative)
 RL: FMU (Formation, unclassified); POL (Pollutant); FORM (Formation, nonpreparative); OCCU (Occurrence)
 (**emissions**; combustion of soybean oil Me ester in a direct injection diesel engine)
 IT Engines
 (diesel, combustion of soybean oil Me ester in a direct injection diesel engine)
 IT **Fatty acids**, uses
 RL: RCT (Reactant); TEM (Technical or engineered material use); RACT (Reactant or reagent); USES (Uses)
 (esters, soya, Me esters; combustion of soybean oil Me ester in a direct injection diesel engine)
 IT 630-08-0, Carbon monoxide, formation (nonpreparative) 11104-93-1, Nitrogen oxide, formation (nonpreparative)
 RL: FMU (Formation, unclassified); POL (Pollutant); FORM (Formation, nonpreparative); OCCU (Occurrence)
 (**emissions**; combustion of soybean oil Me ester in a direct injection diesel engine)
 L7 ANSWER 44 OF 56 CAPLUS COPYRIGHT 2002 ACS
Full Text
 AN 1996:48676 CAPLUS
 DN 124:265467
 TI Comparative study of the boiling characteristics of vegetable oils for the evaluation as fuel
 AU Wenzel, G.; Lammers, P. Schulze

- CS Inst. Landtechnik, Univ. Bonn, Bonn, D-53115, Germany
 SO Fett Wissenschaft Technologie (1995), 97(Sonderausgabe 1), 475-81
 CODEN: FWTEEG; ISSN: 0931-5985
 PB Konradin-Industrieverlag
 DT Journal
 LA German
 CC 52-1 (Electrochemical, Radiational, and Thermal Energy Technology)
 Section cross-reference(s): 45
 AB The boiling curves of vegetable **oils** (hazelnut, rapeseed, rice seed, sesame, cotton seed, safflower) were detected regarding their use as engine **fuels**. The diagrams are very similar. The **oils** decomp. during distn., the decompn. products are produced in different quantities, and 30% remain as a polymer tar. Shifting of b.ps. from 250-270° in the first fraction indicates a relation between b.p. and compn. of vegetable **oils**. The distn. products are instable and become dark with time. During decompn., acid water contg. short chain O compds. is generated, which **ignites** less well than long chain C enriched compds. This could explain the increased **emission** of aldehydes and ketones in exhaust gases of vegetable **oils**.
 ST vegetable oil boiling curve **fuel**
 IT Boiling point
 Distillation
 (boiling characteristics of vegetable **oils** for evaluation as **fuel**)
 IT **Fatty acids**, biological studies
 RL: BOC (Biological occurrence); BSU (Biological study, unclassified); BIOL (Biological study); OCCU (Occurrence)
 (boiling characteristics of vegetable **oils** for evaluation as **fuel**)
 IT Cottonseed oil
 RL: NUU (Other use, unclassified); PRP (Properties); USES (Uses)
 (boiling characteristics of vegetable **oils** for evaluation as **fuel**)
 IT Rape oil
 RL: NUU (Other use, unclassified); PRP (Properties); USES (Uses)
 (boiling characteristics of vegetable **oils** for evaluation as **fuel**)
 IT Safflower oil
 RL: NUU (Other use, unclassified); PRP (Properties); USES (Uses)
 (boiling characteristics of vegetable **oils** for evaluation as **fuel**)
 IT **Fuels**
 (bio-, boiling characteristics of vegetable **oils** for evaluation as **fuel**)
 IT **Fats and Glyceridic oils**
 RL: NUU (Other use, unclassified); PRP (Properties); USES (Uses)
 (hazelnut, boiling characteristics of vegetable **oils** for evaluation as **fuel**)
 IT **Fats and Glyceridic oils**
 RL: NUU (Other use, unclassified); PRP (Properties); USES (Uses)
 (rice bran, boiling characteristics of vegetable **oils** for evaluation as **fuel**)
 IT **Fats and Glyceridic oils**
 RL: NUU (Other use, unclassified); PRP (Properties); USES (Uses)
 (sesame, boiling characteristics of vegetable **oils** for evaluation as **fuel**)
 IT **Fats and Glyceridic oils**
 RL: NUU (Other use, unclassified); PRP (Properties); USES (Uses)
 (vegetable, boiling characteristics of vegetable **oils** for evaluation as **fuel**)
 IT 57-10-3, Hexadecanoic acid, biological studies 57-11-4, Octadecanoic acid, biological studies 60-33-3, Linolic acid, biological studies

463-40-1, Linolenic acid 27104-13-8 28929-01-3
 RL: BOC (Biological occurrence); BSU (Biological study, unclassified);
 BIOL (Biological study); OCCU (Occurrence)
 (boiling characteristics of vegetable oils for evaluation as
 fuel)

L7 ANSWER 45 OF 56 CAPLUS COPYRIGHT 2002 ACS

Full Text

AN 1995:901606 CAPLUS

DN 124:33576

TI **Fatty acid** methyl esters as diesel fuel. Economic, ecological and energetic implications

AU Gomez Herrera, Carlos

CS Academico Numerario Real Academia Sevillana Ciencias, Seville, 41012, Spain

SO Grasas y Aceites (Seville) (1995), 46(2), 121-9

CODEN: GRACAN; ISSN: 0017-3495

PB Instituto de la Grasa y sus Derivados

DT Journal; General Review

LA Spanish

CC 52-0 (Electrochemical, Radiational, and Thermal Energy Technology)
 Section cross-reference(s): 51

AB A review with 13 refs. Rapeseed oils are transesterified with methanol to obtain **fatty acid** Me esters. Blends of these esters with diesel oil are sold in petrol stations in different European countries like any other fuel. This informative article starts by reviewing basic characteristics of diesel fuel, and continues with an anal. of phys. properties, chem. compn. and present specifications for the rapeseed Me esters. Subsequently several implications derived from the industrial development of this biofuel are discussed. These implications are economic, ecol. (nearly zero **emissions** for whole cycle of carbon dioxide, other exhaust **emissions** from combustion, eco-balances), and energetic (complete evaluation of **energy** expenditure for prodn., energetic ratios).

ST review **fatty acid** methyl ester fuel; diesel fuel **fatty acid** ester review; rapeseed oil ester diesel fuel review

IT **Fatty acids**, uses

RL: TEM (Technical or engineered material use); USES (Uses)

(Me esters, economic and ecol. and energetic implications **fatty acid** Me esters as diesel fuel)

IT **Fatty acids**, uses

RL: TEM (Technical or engineered material use); USES (Uses)

(rape-oil, Me esters, economic and ecol. and energetic implications **fatty acid** Me esters as diesel fuel)

IT **Fuels**, diesel

(substitutes, economic and ecol. and energetic implications **fatty acid** Me esters as diesel fuel)

L7 ANSWER 46 OF 56 CAPLUS COPYRIGHT 2002 ACS

Full Text

AN 1995:627087 CAPLUS

DN 123:118312

TI **Emissions** characteristics of soy methyl ester **fuels** in an IDI compression **ignition** engine

AU McDonald, J. F.; Purcell, D. L.; McClure, B. T.; Kittelson, D. B.

CS U.S. Bureau of Mines, USA

SO Society of Automotive Engineers, [Special Publication] SP (1995), SP-1093, 191-207

CODEN: SAESA2; ISSN: 0099-5908

DT Journal

LA English

- CC 52-1 (Electrochemical, Radiational, and Thermal Energy Technology)
Section cross-reference(s): 45, 59
- AB As part of an ongoing program to control the **emissions** of diesel-powered equipment used in underground mines, the U.S. Bureau of Mines evaluated exhaust **emissions** from a compression **ignition** engine using oxygenated diesel **fuels** and a diesel oxidn. catalyst (DOC). The **fuels** include neat (100%) soy Me ester (SME), and a blend of 30 vol.% SME with 70% petroleum diesel **fuel**. A Caterpillar 3304 PCNA engine was tested for approx. 50 h on each **fuel**. Compared with com. low-sulfur diesel **fuel** (D2), neat SME increased volatile org. diesel particulate matter (DPM) but greatly decreased non-volatile DPM, for a net decrease in total DPM. The DOC further reduced volatile and total DPM. NOx **emissions** were slightly reduced for the case of neat SME, but otherwise were not significantly affected. Peak brake power decreased 9% and brake specific **fuel** consumption increased 13 to 14% for the neat Me soyate because of its lower **energy** content compared with D2. An anal. of apparent heat release rates found that SME exhibited a shorter **ignition** delay and some part load redns. in premixed **burn**.
- ST mine diesel exhaust **emission** oxidn catalyst; **fuel** diesel soybean oil Me ester
- IT **Fuels**, diesel
 Ignition
 (**emissions** characteristics of soy Me ester **fuels** from diesel engine in mine)
- IT Oxidation catalysts
 (exhaust; **emissions** characteristics of soy Me ester **fuels** from diesel engine in mine)
- IT Exhaust gases
 (catalytic-converter, **emissions** characteristics of soy Me ester **fuels** from diesel engine in mine)
- IT Exhaust gases
 (diesel, **emissions** characteristics of soy Me ester **fuels** from diesel engine in mine)
- IT **Fatty acids**, uses
 RL: TEM (Technical or engineered material use); USES (Uses)
 (soya, Me esters, **emissions** characteristics of soy Me ester **fuels** from diesel engine in mine)
- IT 11104-93-1, Nitrogen oxide, occurrence
 RL: POL (Pollutant); OCCU (Occurrence)
 (**emissions** characteristics of soy Me ester **fuels** from diesel engine in mine)

L7 ANSWER 47 OF 56 CAPLUS COPYRIGHT 2002 ACS

Full Text

- AN 1995:626783 CAPLUS
- DN 123:118304
- TI Performance of rapeseed methyl ester in diesel engine
- AU Nwafor, O. M. I.; Rice, G.
- CS Department of Engineering, University of Reading, UK
- SO Renewable Energy (1995), 6(3), 335-42
CODEN: RNENE3; ISSN: 0960-1481
- DT Journal
- LA English
- CC 52-1 (Electrochemical, Radiational, and Thermal Energy Technology)
Section cross-reference(s): 45
- AB The paper presents the results of a research carried out to evaluate the performance of rapeseed Me ester (RME) on an unmodified diesel engine. The paper compares the effect of using RME in a diesel engine with baseline test on diesel **fuel**. The test results on rapeseed Me ester showed high friction power and a net redn. in hydrocarbon **emissions**. Carbon deposits on the injector were similar to those obsd. when running on diesel **fuel**. **Fuel** diln. of the lubricating oil was noted,

indicating an incomplete combustion due to the still low volatility of plant **fuel**.

ST rapeseed Me ester diesel **fuel**; friction hydrocarbon **emission** rapeseed Me ester

IT **Fuels**, diesel
(performance of rapeseed Me ester as)

IT Combustion
Ignition
(performance of rapeseed Me ester in diesel engine)

IT Lubricating **oils**
(diesel, diln. with rapeseed Me ester **fuel** during operation)

IT Exhaust gases
(diesel, hydrocarbon **emissions** from rapeseed Me ester)

IT **Fatty acids**, uses
RL: TEM (Technical or engineered material use); USES (Uses)
(rape-oil, Me esters, **fuel**; performance of rapeseed Me ester in diesel engine)

L7 ANSWER 48 OF 56 CAPLUS COPYRIGHT 2002 ACS
Full Text

AN 1995:595889 CAPLUS
DN 123:60892
TI Plant **oils** as liquid **energy** carriers
AU Widmann, Bernhard A.
CS Bayerische Landesanstalt Landtechnik, Freising-Weiherstephan, Germany
SO GSF-Ber. (1995), 01/95, 25-45
CODEN: GSFBEH; ISSN: 0721-1694
DT Report
LA German
CC 51-9 (Fossil Fuels, Derivatives, and Related Products)
Section cross-reference(s): 45, 59

AB After a short summary of the development of and rationale for large-scale use of vegetable oil-derived diesel **fuel**, engine tests were carried out for diesel **fuel** mixts. contg. 10% rapeseed oil or rapeseed-oil Me esters, pure rapeseed oil, and rapeseed-oil Me esters. Despite favorable **emissions** data and engine compatibility results, economically, the introduction of rapeseed oil-derived substitute diesel **fuels** makes more sense in local agricultural areas where markets such as inland marine diesel **fuels**, agricultural **fuels**, and protected watershed and mountain regions can provide special niches or take advantage of the favorable environmental aspects of vegetable oil-derived diesel **fuels**. It is entirely possible, at least for Germany, that a more widespread use of these **fuels** into the general diesel market will require large imports of raw materials, esp. from developing countries.

ST substitute diesel **fuel** vegetable oil; rapeseed oil Me ester
substitute diesel; air pollution vegetable oil diesel; engine compatibility vegetable oil diesel; economics vegetable substitute diesel **fuel**

IT Air pollution
(air pollution and engine compatibility testing of vegetable oil-based substitute diesel **fuels**)

IT Rape oil
RL: IMF (Industrial manufacture); NUU (Other use, unclassified); PREP (Preparation); USES (Uses)
(air pollution and engine compatibility testing of vegetable oil-based substitute diesel **fuels**)

IT Combustion
(compression-**ignition**; air pollution and engine compatibility testing of vegetable oil-based substitute diesel **fuels**)

IT Aldehydes, formation (nonpreparative)
RL: FMU (Formation, unclassified); POL (Pollutant); FORM (Formation,

- nonpreparative); OCCU (Occurrence)
(**emissions**; air pollution and engine compatibility testing of vegetable **oil-based substitute diesel fuels**)
- IT **Fuels, diesel**
(substitute; air pollution and engine compatibility testing of vegetable **oil-based substitute diesel fuels**)
- IT Hydrocarbons, formation (nonpreparative)
RL: FMU (Formation, unclassified); POL (Pollutant); FORM (Formation, nonpreparative); OCCU (Occurrence)
(unburned **emissions**; air pollution and engine compatibility testing of vegetable **oil-based substitute diesel fuels**)
- IT Aromatic hydrocarbons, formation (nonpreparative)
RL: FMU (Formation, unclassified); POL (Pollutant); FORM (Formation, nonpreparative); OCCU (Occurrence)
(C6-8, **emissions**; air pollution and engine compatibility testing of vegetable **oil-based substitute diesel fuels**)
- IT Engines
(diesel, air pollution and engine compatibility testing of vegetable **oil-based substitute diesel fuels**)
- IT Aromatic hydrocarbons, formation (nonpreparative)
RL: FMU (Formation, unclassified); POL (Pollutant); FORM (Formation, nonpreparative); OCCU (Occurrence)
(polycyclic, **emissions**; air pollution and engine compatibility testing of vegetable **oil-based substitute diesel fuels**)
- IT **Fatty acids, uses**
RL: IMF (Industrial manufacture); NUU (Other use, unclassified); PREP (Preparation); USES (Uses)
(rape-oil, Me esters, air pollution and engine compatibility testing of vegetable **oil-based substitute diesel fuels**)
- IT **Fats and Glyceridic oils**
RL: IMF (Industrial manufacture); NUU (Other use, unclassified); PREP (Preparation); USES (Uses)
(vegetable, air pollution and engine compatibility testing of vegetable **oil-based substitute diesel fuels**)
- IT 124-38-9, Carbon dioxide, formation (nonpreparative) 630-08-0, Carbon monoxide, formation (nonpreparative) 7446-09-5, Sulfur dioxide, formation (nonpreparative) 11104-93-1, Nitrogen oxide, formation (nonpreparative)
RL: FMU (Formation, unclassified); POL (Pollutant); FORM (Formation, nonpreparative); OCCU (Occurrence)
(**emissions**; air pollution and engine compatibility testing of vegetable **oil-based substitute diesel fuels**)

L7 ANSWER 49 OF 56 CAPLUS COPYRIGHT 2002 ACS

Full Text

AN 1995:589122 CAPLUS

DN 123:118330

TI **Emissions** from biodiesel combustion in a boiler of a heating system

AU De Stefanis, P.; Di Palo, C.; Montani, R.; Zagaroli, M.; Di Palo, V.; Rotatori, M.

CS Dip. Ambiente, ENEA, S. Maria di Galeria, 00060, Italy

SO Rivista dei Combustibili (1994), 48(9), 337-42

CODEN: RICOAP; ISSN: 0370-5463

PB Centro Graphico Linate

DT Journal

LA Italian

CC 52-1 (Electrochemical, Radiational, and Thermal Energy Technology)

Section cross-reference(s): 59

- AB The paper examines the results of combustion tests performed on a boiler of a hot water central heating system. The tested biodiesel **fuel** was a Me ester produced from vegetable **oils** by a transesterification reaction. The aim of the tests was the comparison between the biodiesel **emissions** and the gas **oil** ones, when **burning** at the same operating conditions. Even though the results of the tests do not allow to draw a conclusion, they provided the base for future expts.
- ST biodiesel **fuel** combustion **emission** boiler heater; vegetable **oil** methyl ester biodiesel **fuel**
- IT Combustion
(**emissions** from combustion of biodiesel **fuel** in boiler of hot water heating system)
- IT Waste gases
(from combustion of biodiesel **fuel** in boiler of hot water heating system)
- IT **Fuels**, diesel
(substitutes, vegetable **oil** Me ester; **emissions** from combustion of biodiesel **fuel** in boiler of hot water heating system)
- IT **Fatty acids**, uses
RL: PEP (Physical, engineering or chemical process); TEM (Technical or engineered material use); PROC (Process); USES (Uses)
(vegetable-oil, Me esters, biodiesel **fuel**; **emissions** from combustion of biodiesel **fuel** in boiler of hot water heating system)
- IT 50-00-0, Formaldehyde, occurrence 50-32-8, Benzo[a]pyrene, occurrence 53-70-3, Dibenz[a,h]anthracene 56-55-3, Benz[a]anthracene 75-07-0, Acetaldehyde, occurrence 85-01-8, Phenanthrene, occurrence 120-12-7, Anthracene, occurrence 129-00-0, Pyrene, occurrence 191-24-2, Benzo[ghi]perylene 193-39-5, Indeno[1,2,3-cd]pyrene 205-99-2, Benz[e]acephenanthrylene 206-44-0, Fluoranthene 207-08-9, Benzo[k]fluoranthene 218-01-9, Chrysene 630-08-0, Carbon monoxide, occurrence 7446-09-5, Sulfur dioxide, occurrence 11104-93-1, Nitrogen oxide, occurrence
RL: POL (Pollutant); OCCU (Occurrence)
(waste gases contg.; **emissions** from combustion of biodiesel **fuel** in boiler of hot water heating system)

L7 ANSWER 50 OF 56 CAPLUS COPYRIGHT 2002 ACS

Full Text

- AN 1995:575721 CAPLUS
- DN 123:12364
- TI A life-cycle inventory for the production of alcohol sulfates in Europe
- AU Hirsinger, F.; Schick, K.-P.
- CS Duesseldorf, Germany
- SO Tenside, Surfactants, Detergents (1995), 32(2), 128-32, 134-9
CODEN: TSDEES; ISSN: 0932-3414
- PB Hanser
- DT Journal; General Review
- LA English
- CC 46-0 (Surface Active Agents and Detergents)
- AB A review with 1 ref. on the resources and **energy** requirements and environmental **emission** arising from the prodn. of 1000 kg of alc. sulfates (AS) based on petrochem. (AS-PC) and 3 oleochem. sources: palm **oil** (AS-PO), palm kernel **oil** (AS-PKO), and coconut **oil** (AS-CNO). The total **energy** requirements range from 52 to 73 GJ/1000 kg (AS-Pc). The fossil-**energy** requirements range from 17.0 GJ (AS-PO) to 69.8 GJ (AS-Pc), representing 33% and 95%, resp., of the total **energy** requirement for the products. Most of the atm. **emissions** arise from the prodn. and consumption of **fuels** and reflect the process **energy** requirements. Methane **emissions** arise from the manuf. of AS-PO and AS-PKO. Non-fossil CO2 arises from AS-PKO and AS-CNO prodn. due to

- combustion of fibers and shells for **energy** generation at the oil mill. Most of the waterborne **emissions** arise from processing operations. COD ranges from 1.6 kg/1000 kg (AS-Pc) to 11 kg (AS-CNO), and dissolved solids range from 5.3 kg to 32 kg, resp. AS-PKO and AS-PO have a COD of about 3 kg and dissolved solids of about 7.6 kg. The high waterborne **emissions** from coconut systems arise from the run-off coconut water when the nuts are halved. The major part of the solid waste is **fuel**-related, ranging from 59% (AS-PKO) to 83% (AS-Pc) of the total solid waste, which ranges from 68 kg (AS-PO) to 88 kg (AS-PKO).
- ST review alc sulfate surfactant prodn; anionic surfactant prodn pollution review
- IT Waste solids
Wastewater
(prepn. of and pollution from prepn. of alc. sulfate surfactants)
- IT Alcohols, preparation
RL: POL (Pollutant); SPN (Synthetic preparation); OCCU (Occurrence); PREP (Preparation)
(prepn. of and pollution from prepn. of alc. sulfate surfactants)
- IT Coconut oil
RL: POL (Pollutant); SPN (Synthetic preparation); OCCU (Occurrence); PREP (Preparation)
(alkyl sulfate, prepn. of and pollution from prepn. of alc. sulfate surfactants)
- IT Surfactants
(anionic, prepn. of and pollution from prepn. of alc. sulfate surfactants)
- IT Fatty acids, preparation
RL: POL (Pollutant); SPN (Synthetic preparation); OCCU (Occurrence); PREP (Preparation)
(palm-oil, sulfo, esters, prepn. of and pollution from prepn. of alc. sulfate surfactants)

L7 ANSWER 51 OF 56 CAPLUS COPYRIGHT 2002 ACS

Full Text

- AN 1994:327416 CAPLUS
- DN 120:327416
- TI Performance and **emission** characteristics of a diesel engine operating on safflower seed oil methyl ester
- AU Isigigur, A.; Karaosmanoglu, F.; Aksoy, H. A.; Hamdullahpur, F.; Gulder, O. L.
- CS Chem. Eng. Dep., Istanbul Tech. Univ., Istanbul, 80626, Turk.
- SO Applied Biochemistry and Biotechnology (1994), 45-46, 93-102
CODEN: ABIBDL; ISSN: 0273-2289
- DT Journal
- LA English
- CC 52-1 (Electrochemical, Radiational, and Thermal Energy Technology)
Section cross-reference(s): 51
- AB Evaluation and testing of safflower seed oil Me ester as a diesel **fuel** alternative was carried out. The kinematic viscosity and ASTM **fuel** properties of the Me ester **fuel** were within the limits specified for Grade No. 2-D diesel **fuel**. Engine tests were performed on a 4-cylinder, direct-injection CI (compression **ignition**) engine using Me ester and ref. diesel **fuel**; engine performance and exhaust **emission** characteristics were detd. Safflower seed oil Me ester revealed similar engine performance characteristics to the ref. Grade No. 2-D diesel **fuel**. Lower CO and hydrocarbon **emissions** were obtained when Me ester was used, and the negligible amt. of S content was an addnl. advantage of Me ester over diesel **fuel**.
- ST safflower oil methyl ester diesel **fuel**; engine safflower oil ester diesel **emission**
- IT Exhaust gases
(from diesel engine fueled with safflower-oil Me ester, low

- pollutant levels in)
- IT Hydrocarbons, miscellaneous
RL: MSC (Miscellaneous)
(in flue gases from safflower-oil Me ester-fueled diesel engine, low levels of)
- IT Engines
(diesel, direct-injection, compression-ignition, safflower-oil Me ester-fueled, performance of)
- IT Fatty acids, esters
RL: USES (Uses)
(safflower-oil, Me esters, as diesel fuel, engine performance and emissions using)
- IT Fuels, diesel
(substitutes, safflower-oil Me ester, engine performance and emissions using)
- IT 630-08-0, Carbon monoxide, miscellaneous 7704-34-9, Sulfur, miscellaneous
RL: MSC (Miscellaneous)
(in flue gases from safflower-oil Me ester-fueled diesel engine, low levels of)
- L7 ANSWER 52 OF 56 CAPLUS COPYRIGHT 2002 ACS
Full Text
- AN 1994:138747 CAPLUS
DN 120:138747
TI Effect of **fuel** modifications on Detroit diesel engine exhaust **emissions**
AU Winsor, R E.
CS Detroit Diesel Corp., USA
SO IMechE Seminar Publication (1993), (2, Fuels for Automotive and Industrial Diesel Engines), 35-43
CODEN: ISEME4; ISSN: 1357-9193
DT Journal; General Review
LA English
CC 51-0 (Fossil Fuels, Derivatives, and Related Products)
Section cross-reference(s): 59
- AB A review, with 9 refs., of changes in pollutant **emissions** (esp. hydrocarbons, CO, NOx, and particulates) based on **fuel** compns. and different types of synthetic diesel **fuel** and **fuel** additives. Types of **fuels** evaluated included rapeseed oil Me esters, soybean oil Me esters, **ignition** improvers, oxygenates, and diglyme and di-Me carbonate additives. Reformulated **fuels** can significantly reduce NOx, CO, and particulates from heavy-duty engines; similarly, oxygenated **fuel** additives can reduce particulates from heavy-duty engines by at least 20%. **Ignition** improver additives can provide significant NOx **emission** redn. Transient **emission** levels as low as 0.056 g/bhp-hr particulates with 4.2 g/bhp-hr NOx were achieved without exhaust gas treatment.
- ST review diesel **fuel** air pollution; exhaust **emission** diesel **fuel** review; reformulated diesel **fuel** pollution review; synthetic diesel **fuel** pollution review; oxygenated diesel **fuel** pollution review; **ignition** improver diesel pollution review; nitrogen oxide diesel **fuel** review; particulate diesel **fuel** review
- IT Fuels, diesel
(compn. of and additives for, pollutant **emissions** in relation to)
- IT Alcohols, uses
RL: USES (Uses)
(diesel **fuel** contg., exhaust **emissions** from)
- IT Ignition
(of diesel **fuel**, additives for improvement of, exhaust **emissions** in relation to)
- IT Particles
(airborne, formation of, in combustion of diesel **fuel**, effect

- of **fuel** compn. and additives on)
- IT Exhaust gases
(diesel, air pollution by, effect of **fuel** compn. and additives on)
- IT **Fatty acids**, esters
RL: USES (Uses)
(rape-oil, Me esters, diesel **fuel** contg., exhaust **emissions** from)
- IT **Fatty acids**, esters
RL: USES (Uses)
(soya, Me esters, diesel **fuel** contg., exhaust **emissions** from)
- IT 111-96-6, Diglyme 616-38-6, Dimethyl carbonate
RL: USES (Uses)
(diesel **fuel** contg., exhaust **emissions** from)
- IT 7782-44-7D, Oxygen, org. compds.
RL: RCT (Reactant); RACT (Reactant or reagent)
(diesel **fuel** contg., exhaust **emissions** from)
- IT 630-08-0P, Carbon monoxide, preparation 11104-93-1P, Nitrogen oxide, preparation
RL: FORM (Formation, nonpreparative); PREP (Preparation)
(formation of, in combustion of diesel **fuel**, effect of **fuel** compn. and additives on)
- L7 ANSWER 53 OF 56 CAPLUS COPYRIGHT 2002 ACS
- Full Text
- AN 1994:81416 CAPLUS
- DN 120:81416
- TI Combustion of soybean **oil** methyl ester in a direct injection diesel engine
- AU Scholl, Kyle W.; Sorenson, Spencer C.
- CS Caterpillar Inc., USA
- SO Society of Automotive Engineers, [Special Publication] SP (1993),
SP-958(New Developments in Alternative Fuels and Gasolines for SI and CI Engines), 211-23
CODEN: SAESA2; ISSN: 0099-5908
- DT Journal
- LA English
- CC 52-1 (Electrochemical, Radiational, and Thermal Energy Technology)
Section cross-reference(s): 59
- AB The purpose of this study is to investigate the combustion of soybean **oil** Me ester in a direct injection diesel engine, and compare it to that of a conventional diesel **fuel**. Exptl. measurements of performance, **emissions**, and rate of heat release were performed as a function of engine load for different **fuel** injection timings, and injector orifice diams. It was found that overall, the soybean **oil** Me ester behaved comparably to diesel **fuel** in terms of performance and rate of heat release. The Me ester **fuel** gave lower hydrocarbon **emissions** and smoke no. than diesel **fuel** at optimum operating conditions. The results for CO **emissions** were varied. NOx **emissions** were strongly related to the cylinder pressure development. Changing the injection orifice diam. had less effect on engine performance when using diesel **fuel**, than with Me ester **fuel**. A smaller orifice diam. gave higher cylinder pressure and max. rate of pressure increase, higher NOx **emissions**, and a larger amt. of premixed **burning** for both **fuels**. The variation of injection timing had a pronounced effect on performance and **emissions** for both **fuels**. Conventional trends in **emissions**, performance and rate of heat release were obsd. for both **fuels**.
- ST soybean **oil** methyl ester **fuel** diesel; engine **fuel** soybean **oil** methyl ester
- IT Hydrocarbons, miscellaneous
RL: MSC (Miscellaneous)
(**emission** of, in exhaust gases of soybean **oil** Me ester-fueled direct injection diesel engine)

IT Combustion
(of soybean oil Me ester, in direct injection diesel engine)

IT Exhaust gases
(of soybean oil Me ester-fueled direct-injection diesel engine, **emissions** in)

IT Engines
(diesel, direct-injection soybean oil Me ester-fueled, performance of)

IT **Fatty acids**, esters
RL: RCT (Reactant); RACT (Reactant or reagent)
(soya, Me esters, combustion of, in direct injection diesel engine)

IT 7782-44-7
RL: USES (Uses)
(combustion, of soybean oil Me ester, in direct injection diesel engine)

IT 11104-93-1, Nitrogen oxide, uses
RL: USES (Uses)
(**emission** of, in exhaust gases of soybean oil Me ester-fueled direct injection diesel engine)

IT 630-08-0, Carbon monoxide, miscellaneous
RL: MSC (Miscellaneous)
(**emission** of, in exhaust gases of soybean oil Me ester-fueled direct injection diesel engine)

L7 ANSWER 54 OF 56 CAPLUS COPYRIGHT 2002 ACS

Full Text

AN 1993:172370 CAPLUS
DN 118:172370
TI Water-in-oil-in-water emulsion **fuels** and their combustion
IN Kanekiyo, Katsumasa
PA Nippon Kankyo Assessment Center, Japan
SO Jpn. Kokai Tokkyo Koho, 6 pp.
CODEN: JKXXAF
DT Patent
LA Japanese
IC ICM C10L001-32
CC 51-12 (Fossil Fuels, Derivatives, and Related Products)
Section cross-reference(s): 59

FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
	-----	----	-----	-----	-----
PI	JP 04252294	A2	19920908	JP 1991-41447	19910128
	JP 06074430	B4	19940921		

AB The **fuels** are obtained by stirring 75-95 parts heavy **oils** having viscosity 150-4000 cSt (50°), 5-25 parts H₂O, and 0.01-0.5% nonionic surfactants (HLB value 5-12) of C₄-12 linear or branched alkyl- or alkenyl-contg. polyoxyethylene Ph ethers (I), C₈-20 (un)satd. linear or branched higher aliph. alc.-derived polyoxyethylene alkyl or alkenyl ethers (II), C₈-20 (un)satd. linear or branched higher **fatty acid**-derived polyoxyethylene alkanoyl or alkenoyl ethers (III), and/or C₈-20 (un)satd. linear or branched higher **fatty acid** alkanol amide-derived polyoxyethylene higher **fatty acid** alkanol amide ethers (IV) at 30-80° to give a water-in-oil emulsion (W) and stirring 15-30 parts H₂O, 0.01-1.0% surfactants contg. ≥1 nonionic surfactants (HLB value 10-18) selected from I-IV, and 70-85 parts W at 30-80°, and their combustion process comprises preheating the **fuels** to decrease viscosity to ≤50 cSt and **burning** with an atomization **burner**. **Emission** of air pollutants, e.g., NO_x, SO_x, dust, etc., are prevented by using the **fuels** and the combustion process.

ST emulsion **fuel** heavy oil surfactant; combustion emulsion **fuel** atomization **burner**; air pollution prevention emulsion **fuel**

IT Air pollution

- (prevention, water-in-oil-in-water emulsion fuels for)
- IT Polyethers, uses
RL: USES (Uses)
(surfactants, emulsion **fuels** contg. water and heavy **oils** and, for prevention of air pollution)
- IT Surfactants
(anionic, emulsion **fuels** contg. water and heavy **oils** and, for prevention of air pollution)
- IT **Fuel oil**
(emulsions, water-in-oil-in-water, contg. heavy **oils** and nonionic surfactants, for prevention of air pollution)
- IT Petroleum
RL: USES (Uses)
(heavy, emulsion **fuels** contg. water and nonionic surfactants and, for prevention of air pollution)
- IT Surfactants
(nonionic, emulsion **fuels** contg. water and heavy **oils** and, for prevention of air pollution)
- IT Combustion
(spray, of water-in-oil-in-water emulsion **fuels**, for prevention of air pollution)
- IT 7782-44-7
RL: RCT (Reactant); RACT (Reactant or reagent)
(combustion, spray, of water-in-oil-in-water emulsion **fuels**, for prevention of air pollution)
- IT 8061-51-6, Sodium lignin sulfonate 9008-63-3 9016-45-9, Nonyl phenol ethoxylate 25322-68-3D, derivs.
RL: USES (Uses)
(surfactants, emulsion **fuels** contg. water and heavy **oils** and, for prevention of air pollution)

L7 ANSWER 55 OF 56 CAPLUS COPYRIGHT 2002 ACS

Full Text

AN 1981:445868 CAPLUS

DN 95:45868

TI **Fuel oil** additives

PA Toray Industries, Inc., Japan

SO Jpn. Kokai Tokkyo Koho, 3 pp.

CODEN: JKXXAF

DT Patent

LA Japanese

IC C10L001-12; C10L001-18

CC 51-9 (Fossil Fuels, Derivatives, and Related Products)

FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	JP 56016593	A2	19810217	JP 1979-92630	19790723

AB **Fuel oil** additives contg. an Fe compd. and a C_≥10 **fatty acid** have an inhibiting effect on NO_x formation during the combustion of **fuel oil**. Thus, an additive was prepd. by dilg. a mixt. contg. Fe(OH)O 2.36, stearic acid [57-11-4] 0.5, and fluid paraffin 5 kg with 3.67 L kerosine. A heavy petroleum **oil** contg. 0.2 wt.% of the additive was **burned**; and the combustion gas formed contained 157 ppm NO_x, compared to 198 ppm in the absence of the additive.

ST **fuel oil** additive combustion improver; iron hydroxide oxide **fuel** additive; stearic acid **fuel oil** additive; nitrogen oxide **emission** control combustion

IT Combustion
(of **fuel oil**, additive for nitrogen oxides **emission** control in)

IT 57-11-4, uses and miscellaneous

RL: USES (Uses)
 (combustion improvers, contg. iron hydroxide oxide and stearic acid,
 for reduced nitrogen oxides formation)

IT 11104-93-1, uses and miscellaneous
 RL: USES (Uses)
 (**emission** of, in **fuel oil** combustion,
 additives for prevention of)

IT 20344-49-4
 RL: USES (Uses)
 (**fuel oil** additive compn. contg., for reduced
 nitrogen oxides formation during combustion)

L7 ANSWER 56 OF 56 CAPLUS COPYRIGHT 2002 ACS
Full Text
 AN 1973:434727 CAPLUS
 DN 79:34727
 TI Effect of combustion on the thermal detoxication of gaseous **emissions**
 AU Gurevich, N. A.
 CS Inst. Gaza, Kiev, USSR
 SO Khim. Tekhnol. (Kiev) (1973), (2), 46-50
 CODEN: KHMTA6
 DT Journal
 LA Russian
 CC 59-2 (Air Pollution and Industrial Hygiene)
 AB The after **burning** of toxic **emissions** from the manuf. of synthetic
fatty acids, phthalic anhydride, drying oils, viscose fibers, and
 carbon black with the aid of natural gas, **fuel oil**, and **coal** was
 studied. The contribution of **fuel** combustion products to the toxicity
 of effluents, kind of **fuel** and its consumption, ratio of combustion
 products to gaseous **emissions**, specific air consumption, conditions and
 technol. process of after **burning** were taken into account in derivation
 of formulas, detg. the efficiency of thermal detoxication. The leading
 pollutants and toxicity factors (actual concn.-to-max. allowable concn.
 ratio were: (1) NOx, 8000-40,000; (2) SO2 + NO2, 20,000-60,000; (3)
 particulate matter + NO2 + SO2, 30,000-50,000 for combustion of natural
 gas, **fuel oil**, and **coal**, resp., where the lower limit corresponds to
 demands of hygienic standardization and the upper limit is based on
 phys.-chem. factors of synergistic action of combustion products. Thus,
 choice of **fuel** and technol. process affect substantially the efficiency
 of thermal detoxication of gaseous **emissions**. Detoxication efficiency
 may be increased considerably when using natural gas and decreasing its
 sp. consumption by rational use of reagents, heat, and by applying
 catalysts **Coal** and **fuel oil** are practically in applicable to thermal
 detoxication of effluents, for which toxicity factor lies below 50,000.
 The recommended method of detn. of total toxicity of atm. pollutants is
 intended exclusively for comparative evaluation of gaseous effluents.

ST drying oil **emission** detoxication; thermal detoxication org vapor;
 viscose fiber **emission** detoxication; phthalic anhydride **emission**
 detoxication; **fuel** combustion **emission** detoxication; nitrogen oxide
emission detoxication; combustion waste gas

IT **Oils**
 RL: IMF (Industrial manufacture); PREP (Preparation)
 (drying, waste gas from manuf. of, thermal detoxication of)

IT Combustion
 (of waste gases, in afterburner, thermal detoxication in)

IT Waste gases
 (thermal detoxication of, in afterburner)

IT Carbon black, preparation
Fatty acids, preparation
 Rayon, preparation
 RL: IMF (Industrial manufacture); PREP (Preparation)
 (waste gas from manuf. of, detoxication of, in afterburner)

STN Columbus

IT Fuel oil
 Coal
 Natural gas
 RL: OCCU (Occurrence)
 (waste gas thermal detoxication by, in afterburner)
 IT 7446-09-5, uses and miscellaneous 11104-93-1
 RL: REM (Removal or disposal); PROC (Process)
 (removal of, from waste gas in afterburner)
 IT 85-44-9P
 RL: IMF (Industrial manufacture); PREP (Preparation)
 (waste gas from manuf. of, detoxication of, in afterburner)

=> file stnguide

COST IN U.S. DOLLARS	SINCE FILE ENTRY	TOTAL SESSION
FULL ESTIMATED COST	172.04	172.25
DISCOUNT AMOUNTS (FOR QUALIFYING ACCOUNTS)	SINCE FILE ENTRY	TOTAL SESSION
CA SUBSCRIBER PRICE	-34.69	-34.69

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L1 273225 S FATTY ACID
 L2 837432 S FAT OR OIL
 L3 92558 S L1 AND L2
 L4 0 S L3 AND (FUEL OR COAL)
 L5 2364 S L3 AND (FUEL OR COAL)
 L6 342 S L5 AND (BURN? OR IGNIT? OR ENERGY)
 L7 56 S L6 AND EMISSION

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=> file caplus

COST IN U.S. DOLLARS	SINCE FILE ENTRY	TOTAL SESSION
FULL ESTIMATED COST	1.86	174.11
DISCOUNT AMOUNTS (FOR QUALIFYING ACCOUNTS)	SINCE FILE ENTRY	TOTAL SESSION
CA SUBSCRIBER PRICE	0.00	-34.69

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```
=> s l5 and byproduct
      24054 BYPRODUCT
      19941 BYPRODUCTS
      39833 BYPRODUCT
          (BYPRODUCT OR BYPRODUCTS)
L8      30 L5 AND BYPRODUCT
```

```
=> d l8 1-30 ti
```

```
L8  ANSWER 1 OF 30  CAPLUS  COPYRIGHT 2002 ACS
TI  Advances in biodiesel fuel research
```

```
L8  ANSWER 2 OF 30  CAPLUS  COPYRIGHT 2002 ACS
TI  Procedure and apparatus for the continuous production of bio-methanol and
    bio-ethanol diesel
```

```
L8  ANSWER 3 OF 30  CAPLUS  COPYRIGHT 2002 ACS
TI  Biodiesel fuel production by transesterification of oils
```

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L8  ANSWER 4 OF 30  CAPLUS  COPYRIGHT 2002 ACS
TI  Organic compounding agent for powdered nitramon explosive
```

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L8  ANSWER 5 OF 30  CAPLUS  COPYRIGHT 2002 ACS
TI  Non-TNT nitramon explosive for coal mine
```

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L8  ANSWER 6 OF 30  CAPLUS  COPYRIGHT 2002 ACS
TI  Powdered ammonium nitrate-based explosives for quarry
```

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L8  ANSWER 7 OF 30  CAPLUS  COPYRIGHT 2002 ACS
TI  Process for preparing feed supplements for ruminants
```

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L8  ANSWER 8 OF 30  CAPLUS  COPYRIGHT 2002 ACS
TI  Process for preparing alkyl esters of fatty acids from fats and oils
```

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L8  ANSWER 9 OF 30  CAPLUS  COPYRIGHT 2002 ACS
TI  Evaluation of method performance and detection limits for various
    flotation reagents used in the Florida phosphate industry
```

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L8  ANSWER 10 OF 30 CAPLUS  COPYRIGHT 2002 ACS
TI  Optimization of enzymatic transesterification of rapeseed oil ester
    using response surface and principal component methodology
```

```
L8  ANSWER 11 OF 30 CAPLUS  COPYRIGHT 2002 ACS
```

- TI Biodiesel production: a review
- L8 ANSWER 12 OF 30 CAPLUS COPYRIGHT 2002 ACS
TI Preparation of mixture of esters of C1-4 alcohols and **fatty acids** of natural **oils** and **fats** especially for use as diesel **fuel** or heating **oil**
- L8 ANSWER 13 OF 30 CAPLUS COPYRIGHT 2002 ACS
TI Low temperature conversion of sugar-cane **byproducts**
- L8 ANSWER 14 OF 30 CAPLUS COPYRIGHT 2002 ACS
TI Mixed vegetable and diesel **oil** as **fuel**
- L8 ANSWER 15 OF 30 CAPLUS COPYRIGHT 2002 ACS
TI Refining method for waste edible **oils** as raw materials for recovery of diesel **fuels**, glycerin and substitute **fuels** for heavy-oil burners
- L8 ANSWER 16 OF 30 CAPLUS COPYRIGHT 2002 ACS
TI Biodegradation of diesel and heating **oil** by *Acinetobacter calcoaceticus* MM5: its possible applications on bioremediation
- L8 ANSWER 17 OF 30 CAPLUS COPYRIGHT 2002 ACS
TI Energy analysis of rape methyl ester (RME) production from winter oilseed rape
- L8 ANSWER 18 OF 30 CAPLUS COPYRIGHT 2002 ACS
TI Production of diesel **fuel** from rape **oil**
- L8 ANSWER 19 OF 30 CAPLUS COPYRIGHT 2002 ACS
TI Substitutes for sulfurized sperm **oil** from a mixture of natural and synthetic esters
- L8 ANSWER 20 OF 30 CAPLUS COPYRIGHT 2002 ACS
TI Method for purifying fatty esters
- L8 ANSWER 21 OF 30 CAPLUS COPYRIGHT 2002 ACS
TI The potential of biodiesel, from oilseed rape
- L8 ANSWER 22 OF 30 CAPLUS COPYRIGHT 2002 ACS
TI Catalytic upgrading of biomass derivatives to transportation **fuels**
- L8 ANSWER 23 OF 30 CAPLUS COPYRIGHT 2002 ACS
TI Emulsion **fuel** from heavy petroleum fractions
- L8 ANSWER 24 OF 30 CAPLUS COPYRIGHT 2002 ACS
TI Conversion of high-acidity vegetable **oils** to ethyl esters in the presence of acid catalysts, for **fuels**
- L8 ANSWER 25 OF 30 CAPLUS COPYRIGHT 2002 ACS
TI Ammonium nitrate-tall **oil** explosives
- L8 ANSWER 26 OF 30 CAPLUS COPYRIGHT 2002 ACS
TI Principle of the new ATT process for converting vegetable **oils** to diesel **fuels**
- L8 ANSWER 27 OF 30 CAPLUS COPYRIGHT 2002 ACS
TI Manufacture of uranium-containing heavy metal salts using sea water as raw material and producing pure water as **byproduct**
- L8 ANSWER 28 OF 30 CAPLUS COPYRIGHT 2002 ACS
TI Extraction and transesterification of vegetable **oils** with ethanol
- L8 ANSWER 29 OF 30 CAPLUS COPYRIGHT 2002 ACS

TI Continuous reactor with heterogeneous organic catalysts for transesterification of vegetable oils

L8 ANSWER 30 OF 30 CAPLUS COPYRIGHT 2002 ACS

TI Fuel oil additives

=> dl8 1 13 14 15 18 22 30 all

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=> d 18 1 13 14 15 18 22 30 all

L8 ANSWER 1 OF 30 CAPLUS COPYRIGHT 2002 ACS

Full Text

AN 2002:554404 CAPLUS

DN 137:250109

TI Advances in biodiesel fuel research

AU Kann, Juri; Rang, Heino; Kriis, Juri

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PB Estonian Academy Publishers

DT Journal; General Review

LA English

CC 52-0 (Electrochemical, Radiational, and Thermal Energy Technology) Section cross-reference(s): 17

AB A review of research on biodiesel fuel sources, properties, prepn. methods, prodn., exhaust gases emitted by using biodiesel fuel, anal. methods, and economic aspects. The main advantage of biodiesel fuel is lower concn. of greenhouse gases (esp. CO2) and other pollutants in motor exhaust gases compared to petroleum diesel fuel. The main concerns with biodiesel fuel are its relatively high price, instability, and low-temp. properties. The future aims in biodiesel fuel research are improvement of prodn. technol. and redn. of the costs of prodn. of plant oil by plant breeding, selection, and gene technol. The low-temp. properties and stability of biodiesel fuel can be improved by additives and genetic engineering of oil plants. The paper includes 250 refs.

ST review biodiesel fuel transesterification fatty acid ester emission control

IT Fats and Glyceridic oils, processes

RL: CPS (Chemical process); PEP (Physical, engineering or chemical process); PROC (Process)

(as renewable raw materials for biodiesel; review of advances in biodiesel fuel research with regards to source oils and fatty acid distribution in triglycerides of fats and oils)

IT Molecular structure-property relationship

(b.p., cetane no., viscosity, d., heats of combustion, iodine no., low temp. properties such as m.p., crystallite onset temp., pour and cloud point; review of phys. and chem. properties of diesel and various biodiesel esters)

IT Diesel fuel substitutes

(biodiesel; review of advances in biodiesel fuel research with regards to source oils, additives, and processing)

IT Air pollution

(control, reduced pollutant emission using biodiesel; review of advances in biodiesel fuel research with regards to source

- oils, additives, and processing)
- IT **Fatty acids, uses**
 RL: TEM (Technical or engineered material use); USES (Uses)
 (esters; review of advances in biodiesel **fuel** research with
 regards to source **oils**, additives, and processing)
- IT **Fatty acids, occurrence**
 RL: OCU (Occurrence, unclassified); OCCU (Occurrence)
 (**fatty acid** distribution in triglycerides of
fats and **oil** used as renewable raw materials for
 biodiesel)
- IT **Diesel fuel additives**
 (for modification of viscosity, corrosion and lubrication properties,
 pour point and crystn., and polymn.-fouling; review of advances in
 biodiesel **fuel** research with regards to source **oils**
 , additives, and processing)
- IT **Genetic engineering**
 (manipulation of **fatty acid** distribution in
 triglycerides of **oils** for raw materials for biodiesel)
- IT **Wastes**
 (**oil**, as renewable raw materials for biodiesel; review of
 advances in biodiesel **fuel** research with regards to source
oils, additives, and processing)
- IT **Transesterification**
 (processes, catalysts, and **byproducts**; review of advances in
 biodiesel **fuel** research with regards to source **oils**
 , additives, and processing)
- IT **Greenhouse gases**
 (reduced levels of; review of advances in biodiesel **fuel**
 research with regards to source **oils**, additives, and
 processing)
- IT **Exhaust gases (engine)**
 (review of advances in biodiesel **fuel** research with regards
 to source **oils**, additives, and processing)
- RE.CNT 257 THERE ARE 257 CITED REFERENCES AVAILABLE FOR THIS RECORD
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Full Text

AN 1998:593782 CAPLUS

DN 129:191451

- TI Low temperature conversion of sugar-cane **byproducts**
 AU Lutz, Harald; Esuoso, Kayode; Kutubuddin, Mohamed; Bayer, Ernst
 CS Institute of Organic Chemistry, University of Tübingen, D-72076, Germany
 SO Biomass and Bioenergy (1998), 15(2), 155-162
 CODEN: BMSBEO; ISSN: 0961-9534
 PB Elsevier Science Ltd.
 DT Journal
 LA English
 CC 52-1 (Electrochemical, Radiational, and Thermal Energy Technology)
 Section cross-reference(s): 49, 60
- AB This work reports the low temp. conversion (LTC) of the most important sugar-cane **byproducts**, i.e., sugar-cane bagasse, filter mud, molasses and alc. sludge, into **oil**, char, reaction water and non-condensable gases. The **oil** was analyzed for **fatty acids** and hydrocarbons. Active carbon was produced from the char and was characterized subsequently. Filter mud gave the highest yield of LTC **oil** (20.6%), while other samples recorded yields lower than 6%. The heating values of the **oils** were between 24.5 kJ g⁻¹ and 35.6 kJ g⁻¹. Thermogravimetric studies of the LTC **oil** from filter mud indicated that 99% was vaporized at temps. below 450°. Varying concns. of C8-C30 hydrocarbons were detected in the **oil**. The distribution pattern of hydrocarbons, however, was unusual compared to typical **oils** from LTC. The yields of LTC chars were between 35.4% and 77.6%. These chars have been activated and the conditions were optimized. Active carbon from bagasse recorded a high iodine and methylene blue no. (1180 mg g⁻¹ and 275 mg g⁻¹, resp.). The BET surface is also very high (1035 m² g⁻¹) and consists of a large proportion of micro- and mesopores. Active carbons produced from the other samples however exhibited also fairly high iodine, methylene blue and BET values. These results are discussed comparatively and the potential of the wastes is outlined.
- ST sugarcane **byproduct** conversion **fuel oil**
 IT Hydrocarbons, preparation
 RL: SPN (Synthetic preparation); PREP (Preparation)
 (C8-C30; low temp. conversion of sugarcane **byproducts**)
- IT Mud
 (filter mud; low temp. conversion of sugarcane **byproducts**)
- IT Bagasse
 Calorific value
 Chars
 Sludges
 Sugarcane
 (low temp. conversion of sugarcane **byproducts**)
- IT Alkanes, preparation
 Alkenes, preparation
 Hydrocarbon **oils**
 RL: SPN (Synthetic preparation); PREP (Preparation)
 (low temp. conversion of sugarcane **byproducts**)
- IT Molasses
 (sludge; low temp. conversion of sugarcane **byproducts**)
- IT **Fuel oil**
Fuel oil
 (synthetic, pyrolytic; low temp. conversion of sugarcane **byproducts**)
- IT 7440-44-0P, Carbon, preparation
 RL: SPN (Synthetic preparation); PREP (Preparation)
 (activated; low temp. conversion of sugarcane **byproducts**)
- IT 64-17-5P, Ethanol, preparation
 RL: IMF (Industrial manufacture); PREP (Preparation)
 (sludge; low temp. conversion of sugarcane **byproducts**)

L8 ANSWER 14 OF 30 CAPLUS COPYRIGHT 2002 ACS

Full Text

AN 1997:635644 CAPLUS
 DN 127:309420
 TI Mixed vegetable and diesel oil as fuel
 AU Zubr, J.; Matzen, R.
 CS Department of Agricultural Sciences, The Royal Veterinary and Agricultural University, Frederiksberg, 1958, Den.
 SO Biomass for Energy and the Environment, Proceedings of the European Bioenergy Conference, 9th, Copenhagen, June 24-27, 1996 (1996), Volume 3, 1644-1653. Editor(s): Chartier, Philippe. Publisher: Elsevier, Oxford, UK.
 CODEN: 65BUA6
 DT Conference
 LA English
 CC 52-1 (Electrochemical, Radiational, and Thermal Energy Technology)
 Section cross-reference(s): 11
 AB Biofuel for diesel engines was introduced to the market in certain European countries recently. Vegetable oil as raw material for the biofuel originates from oilseed crops grown on set-aside land with EC subsidies. Prodn. of the biofuel includes the conversion process of esterification, requiring special equipment and a considerable input in the form of additives, energy, and labor. **Byproducts** from esterification, e.g., glycerin and polluted water, are unavoidable. To minimize the prodn. expenses and to eliminate the **byproducts**, an alternative fuel was found in the form of a mixt. contg. diesel oil and crude vegetable oil. For this purpose a naturally pure vegetable oil was chosen from seeds of false flax *Camelina sativa*. At the present time, *Camelina* is not known as an agricultural crop in practice. However, the crop can be grown under different climatic conditions using a low input and environmentally friendly cultivation without application of pesticides. *Camelina oil* is characterized by a high content of unsatd. **fatty acids** (about 90%). Iodine no. of the oil is about 160. The mixed fuel was tested in a Farymann Diesel engine, run at const. optimum load of 4.00 kW with 3260 R/min. The engine was fueled with pure diesel oil and with two mixts. contg. *camelina oil*. Each fuel was tested by running the engine for 250 h. Specific consumption of pure diesel oil was 271.6 g/kWh. When running the engine on the mixed fuel with 5 and 10% *camelina oil*, the specific consumption of fuel was 273.4 g/kWh and 277.1 g/kWh, resp. Carbon deposits on the piston and combustion chamber, and the amts. of soot in the exhaust gas, were similar for all tested fuels. Carbon deposits on the injection nozzle were slightly increased with increasing proportions of *camelina oil* in the mixed fuel. Independent of the fuel, after running for 250 h, the function of the injectors was still within the norm for ordinary performance.
 ST vegetable oil diesel oil fuel blend; *camelina oil* diesel oil fuel blend; biofuel vegetable oil diesel oil blend; biodiesel *camelina oil* diesel oil blend
 IT **Fuels**
 (alternative; mixed vegetable and diesel oil as fuel
)
 IT **Fuels**
 (biofuels; mixed vegetable and diesel oil as fuel)
 IT Analytical numbers
 (iodine no.; mixed vegetable and diesel oil as fuel
)
 IT Calorific value
 Camelina sativa
 Cetane number
 Cloud point
 Coking
 Density
 Diesel engines
 Diesel fuel

Flash point
Soot
Viscosity
(mixed vegetable and diesel oil as fuel)

IT Rape oil
Soybean oil
Sunflower oil
RL: PRP (Properties)
(mixed vegetable and diesel oil as fuel)

IT Fats and Glyceridic oils, reactions
RL: PRP (Properties); RCT (Reactant); RACT (Reactant or reagent)
(vegetable; mixed vegetable and diesel oil as fuel)

IT 7440-44-0, Carbon, formation (nonpreparative)
RL: FMU (Formation, unclassified); FORM (Formation, nonpreparative)
(deposits; mixed vegetable and diesel oil as fuel)

IT 57-10-3, Palmitic acid, properties 57-11-4, Stearic acid, properties
60-33-3, Linoleic acid, properties 112-80-1, Oleic acid, properties
112-86-7, Erucic acid 463-40-1, Linolenic acid 506-30-9, Arachidic
acid 5561-99-9, Gondoic acid 25448-01-5, Eicosadienoic acid
27070-56-0, Eicosatrienoic acid
RL: PRP (Properties)
(mixed vegetable and diesel oil as fuel)

L8 ANSWER 15 OF 30 CAPLUS COPYRIGHT 2002 ACS
Full Text

AN 1997:614387 CAPLUS
DN 127:265530
TI Refining method for waste edible oils as raw materials for recovery of
diesel fuels, glycerin and substitute fuels for heavy-oil burners
IN Someya, Akio
PA Someya Shoten Y. K., Japan
SO Jpn. Kokai Tokkyo Koho, 4 pp.
CODEN: JKXXAF
DT Patent
LA Japanese
IC ICM C10L001-02
ICS B01J027-02; C10L001-08; C11B013-00; C11C003-10; C07B061-00
CC 52-1 (Electrochemical, Radiational, and Thermal Energy Technology)
Section cross-reference(s): 17, 45, 60

FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	JP 09235573	A2	19970909	JP 1996-67154	19960228
	JP 3028282	B2	20000404		

AB The title method comprises heating waste edible oils in a caustic
alkali-dissolved MeOH soln. for transesterification to sep. higher fatty
acid Me esters as diesel fuels, neutralizing the byproducts to
distn. recover MeOH and to sep. refined glycerin, esterifying the
remainder of higher fatty acids with MeOH and H2SO4 catalyst,
neutralizing the H2SO4 catalyst and water washing for removal, and
obtaining higher fatty acid Me esters and fatty acids as
heavy-oil burner substitute fuels.

ST waste edible oil diesel fuel recovery; burner heavy oil substitute
fuel; glycerin recovery waste edible oil fuel

IT Fatty acids, uses
RL: NUU (Other use, unclassified); PUR (Purification or recovery); PREP
(Preparation); USES (Uses)
(Me esters; refining method for waste edible oils as raw
materials for recovery of diesel fuels, glycerin and
substitute fuels for heavy-oil burners)

IT Wastes
(cooking oil; refining method for waste edible oils)

- as raw materials for recovery of diesel **fuels**, glycerin and substitute **fuels** for heavy-oil burners)
- IT **Wastes**
(edible **oils**; refining method for waste edible **oils** as raw materials for recovery of diesel **fuels**, glycerin and substitute **fuels** for heavy-oil burners)
- IT **Fuel oil**
(heavy, substitute; refining method for waste edible **oils** as raw materials for recovery of diesel **fuels**, glycerin and substitute **fuels** for heavy-oil burners)
- IT **Burners**
(oil-fired; refining method for waste edible **oils** as raw materials for recovery of diesel **fuels**, glycerin and substitute **fuels** for heavy-oil burners)
- IT **Diesel fuel**
(refining method for waste edible **oils** as raw materials for recovery of diesel **fuels**, glycerin and substitute **fuels** for heavy-oil burners)
- IT **Fatty acids, uses**
RL: NUU (Other use, unclassified); PUR (Purification or recovery); PREP (Preparation); USES (Uses)
(refining method for waste edible **oils** as raw materials for recovery of diesel **fuels**, glycerin and substitute **fuels** for heavy-oil burners)
- IT **Fuel oil**
(substitutes; refining method for waste edible **oils** as raw materials for recovery of diesel **fuels**, glycerin and substitute **fuels** for heavy-oil burners)
- IT **Fats and Glyceridic oils, uses**
RL: NUU (Other use, unclassified); PEP (Physical, engineering or chemical process); PROC (Process); USES (Uses)
(vegetable, cooking **oil** wastes; refining method for waste edible **oils** as raw materials for recovery of diesel **fuels**, glycerin and substitute **fuels** for heavy-oil burners)
- IT 56-81-5P, Glycerin, preparation
RL: BYP (Byproduct); PREP (Preparation)
(refining method for waste edible **oils** as raw materials for recovery of diesel **fuels**, glycerin and substitute **fuels** for heavy-oil burners)

L8 ANSWER 18 OF 30 CAPLUS COPYRIGHT 2002 ACS

Full Text

AN 1995:806351 CAPLUS
DN 123:204328
TI Production of diesel **fuel** from rape **oil**
IN Skopal, Frantisek; Komers, Karel; Machek, Jaroslav
PA Czech Rep.
SO Czech Rep., 5 pp.
CODEN: CZXXED
DT Patent
LA Czech
IC C10L001-02; C10L001-18; C07C067-03; C11C003-04
CC 52-1 (Electrochemical, Radiational, and Thermal Energy Technology)
Section cross-reference(s): 19

FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	CZ 278914	B6	19940817	CZ 1992-2208	19920715
	SK 277856	B6	19950510	SK 1992-2208	19920715
PRAI	CZ 1992-2208		19920715		
AB	Diesel fuel is produced from rape oil by transesterification with MeOH				

in the presence of a KOH catalyst. H_3PO_4 10-50% mol. excess (KOH basis) is then added. After neutralization, unreacted MeOH is removed by vacuum evapn. at 666-1333 Pa or air bubbling at 20-50°, condensed, and recycled. The pptd. KH_2PO_4 is sepd. by filtration or centrifuging and used as a fertilizer. The liq. phase is sepd. to obtain an upper layer of the synthetic diesel fuel and a lower aq. glycol layer.

ST diesel fuel manuf rape oil

IT Fertilizers

RL: IMF (Industrial manufacture); PEP (Physical, engineering or chemical process); PREP (Preparation); PROC (Process)

(potassium dihydrogen phosphate **byproduct** from synthetic diesel fuel manuf.)

IT Rape oil

RL: PEP (Physical, engineering or chemical process); PROC (Process)

(transesterification of rape oil with methanol in manuf. of diesel fuel)

IT Fatty acids, preparation

RL: IMF (Industrial manufacture); PREP (Preparation)

(rape-oil, Me ester; as synthetic diesel fuel)

IT Fuels, diesel

(synthetic, prodn. of synthetic diesel fuel from rape oil)

IT 1310-58-3, Potassium hydroxide, uses

RL: CAT (Catalyst use); USES (Uses)

(as catalyst in transesterification of rape oil in manuf. of synthetic diesel fuel)

IT 7778-77-0P, Potassium phosphate (KH_2PO_4)

RL: IMF (Industrial manufacture); PEP (Physical, engineering or chemical process); PREP (Preparation); PROC (Process)

(**byproduct** from synthetic diesel fuel manuf. as fertilizer)

IT 7664-38-2, Phosphoric acid, uses

RL: NUU (Other use, unclassified); USES (Uses)

(in transesterification of rape oil in manuf. of diesel fuel)

IT 67-56-1, Methanol, reactions

RL: RCT (Reactant); RACT (Reactant or reagent)

(in transesterification of rape oil in manuf. of diesel fuel)

L8 ANSWER 22 OF 30 CAPLUS COPYRIGHT 2002 ACS

Full Text

AN 1993:653564 CAPLUS

DN 119:253564

TI Catalytic upgrading of biomass derivatives to transportation fuels

AU Olson, Edwin S.; Sharma, Ramesh K.

CS Universal Fuel Dev. Associates, Inc., Grand Forks, ND, 58201, USA

SO Energy from Biomass and Wastes (1993), 16, 739-51

CODEN: EBWADU; ISSN: 0277-7851

DT Journal

LA English

CC 52-1 (Electrochemical, Radiational, and Thermal Energy Technology)

Section cross-reference(s): 51

AB Hydrocracking of biomass-derived materials for manuf. of transportation fuels was investigated under several conditions. Data on the conversion of fatty acids to high-quality gasoline products are presented. These studies serve as models for the use of waste oils and **byproducts**, e.g., tall acids, that could serve as inexpensive precursors for transportation fuels. Studies with Ni-substituted synthetic mica montmorillonite and its alumina-pillared form catalysts gave high yields of distillate in the gasoline range contg. high percentage of branched alkanes and low percentage of arom. hydrocarbons.

- ST biomass deriv catalytic upgrading transportation **fuel**; gasoline
synthetic **fatty acid** conversion; mica montmorillonite catalyst biomass
upgrading **fuel**
- IT Tall oil
RL: USES (Uses)
(catalytic upgrading of, to transportation **fuels**)
- IT Alkanes, preparation
Cycloalkanes
RL: FORM (Formation, nonpreparative)
(formation of, in catalytic upgrading of biomass derivs. to
transportation **fuels**)
- IT Gasoline
RL: USES (Uses)
(manuf. of, catalytic upgrading of biomass derivs. for)
- IT Catalysts and Catalysis
(synthetic mica montmorillonite, nickel-substituted, alumina-pillared,
for upgrading of biomass derivs. to transportation **fuels**)
- IT Aromatic hydrocarbons, preparation
RL: FORM (Formation, nonpreparative)
(C6-8, formation of, in catalytic upgrading of biomass derivs. to
transportation **fuels**)
- IT **Fuels**
(automotive, manuf. of, catalytic upgrading of biomass derivs. for)
- IT Aromatic hydrocarbons, preparation
RL: FORM (Formation, nonpreparative)
(bicyclic, formation of, in catalytic upgrading of biomass derivs. to
transportation **fuels**)
- IT Alkanes, preparation
RL: FORM (Formation, nonpreparative)
(branched, formation of, in catalytic upgrading of biomass derivs. to
transportation **fuels**)
- IT Mica-group minerals, compounds
RL: USES (Uses)
(interstratification compds., with montmorillonite, nickel-substituted,
alumina-pillared, synthetic, catalysts, for upgrading of biomass
derivs. to transportation **fuels**)
- IT Wastes
(oil, vegetable, catalytic upgrading of, to transportation
fuels)
- IT Aromatic hydrocarbons, preparation
RL: FORM (Formation, nonpreparative)
(tricyclic, formation of, in catalytic upgrading of biomass derivs. to
transportation **fuels**)
- IT **Fats and Glyceridic oils**
RL: USES (Uses)
(vegetable, waste, catalytic upgrading of, to transportation
fuels)
- IT 112-80-1, Oleic acid, uses
RL: USES (Uses)
(catalytic upgrading of, to transportation **fuels**)
- IT 1318-93-0D, Montmorillonite, interstratification compds. with mica,
nickel-substituted, alumina-pillared
RL: USES (Uses)
(synthetic, catalysts, for upgrading of biomass derivs. to
transportation **fuels**)

L8 ANSWER 30 OF 30 CAPLUS COPYRIGHT 2002 ACS

Full Text

AN 1967:413600 CAPLUS
DN 67:13600
TI **Fuel oil** additives
PA Basic Inc.

SO Brit., 4 pp.
 CODEN: BRXXAA
 DT Patent
 LA English
 IC C10L
 CC 51 (Petroleum, Petroleum Derivatives, and Related Products)
 FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	GB 1061161		19670308		
PRAI	US		19630529		

AB Carboxylic acids are dispersants for metal-contg. corrosion inhibitors in **fuel oil** concentrates. The dispersant may be a tall **oil** acid, a rosin acid, a hydrogenated rosin acid, an aromatic or alkylaromatic acid, a naphthenic acid or a **fatty acid**. Acid loadings of 0.5-15.0 wt.% enable concentrates to be prepd. contg. ≤ 84 wt. % solid inhibitor while maintaining stability and good pumping characteristics. These properties are due to the formation of a soap between the acid and the metal-contg. inhibitor and hence similar results can be obtained by adding the appropriate carboxylic acid salt. In an example, 300 g. Dolomite were added to 150 g. No. 2 **fuel oil** in a Waring blender to give a nonfluid paste contg. 66.7% solids. The addn. of 1 g. tallene (a **byproduct** recoverable from waste paper liquors which comprises a mixt. of fatty and rosin acids) converted the mix to an extremely fluid and pumpable dispersion. The method permits higher loadings of corrosion inhibitors in additive concentrates and reduces the unit power requirements of any operation, such as grinding, which may subsequently be carried out on the mixt.

ST INHIBITORS CORROSION **FUEL OILS**; **FUEL OILS** CORROSION INHIBITORS; CORROSION INHIBITORS **FUEL OILS**; METAL CORROSION INHIBITORS CONTG; DISPERSANTS CORROSION INHIBITORS

IT Acids, uses and miscellaneous
 RL: USES (Uses)
 (carboxylic, as dispersant for metal-contg. corrosion inhibitors for **fuel oils**)

IT **Fuel oil**, reactions
 (corrosion by, dispersants for inhibitors for, carboxylic acids)

IT Acids, uses and miscellaneous
 RL: USES (Uses)
 (metal-contg. corrosion inhibitor dispersant from carboxylic, for **fuel oils**)

IT Tallene
 RL: USES (Uses)
 (as dispersant for metal-contg. corrosion inhibitors in **fuel oil**)

IT 17069-72-6
 RL: USES (Uses)
 (as **fuel oil** additive)

IT 1317-43-7
 RL: USES (Uses)
 (calcined, as **fuel oil** additive)

=> ly

LY IS NOT A RECOGNIZED COMMAND

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 "HELP COMMANDS" at an arrow prompt (=>).

=> log y

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SINCE FILE
 ENTRY

TOTAL
 SESSION

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DISCOUNT AMOUNTS (FOR QUALIFYING ACCOUNTS)	SINCE FILE	TOTAL
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